zardax

Word Processor

SERIAL # 9173

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Zardax
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Computer Solutions
P.O. Box 397
Mt Gravatt 0 4122
AUSTRALIA

zardax™

WORD PROCESSOR

for Apple II Plus 48K Disk II

SERIAL # 9173-B Version 5.2.1

6 Maize Place, Mansfield, Q. 4122 Australia
POSTAL ADDRESS: P.O. Box 397 Mt. Gravatt Q. 4122 Australia
Australia PHONE: (07) 349 9883
International (61) (7) 349 9883

Computer Solutions

L A T E N O T E S

The Utilities disk is copyable, and the user is urged to make his own backup copies (see your DOS manual to find out how to copy disks). The Utilities disk is copyright; however Computer Solutions hereby gives permission for users of ZARDAX to make copies of Utilities for other users of ZARDAX they may know.

The Utilities disk has documents on it which the user is urged to read.

Zardax works on the Apple //e in a way slightly different from the description in the manual. The //e keyboard has two "apple" keys. These keys should be used whenever the manual says to use the CTRL key.

The //e keyboard has a CONTROL key which can be used **sometimes** in the same way as the CTRL key on the older model Apple II+. But the "apple" keys can **always** be used validly where the manual says to use CTRL.

To delete characters the "DEL" key is used left deletion and "apple DEL" for deletion to the right. The arrows are now used for cursor movement.

The manual refers to a keyboard modification. THE KEYBOARD MOD IS NOT REQUIRED FOR THE APPLE //e or the Franklin 1000.

Function	**Apple][+**	**Apple //e**	**Franklin 1000**
Beginning	ctrl-B	apple-B	ctrl-B
Clear tab	ctrl-C	apple-C	ctrl-C or BREAK
Down one line	ctrl-D	apple-D	ctrl-D
Down 10 lines	Ctrl-V	apple-V	ctrl-V
End of text	ctrl-E	apple-E	ctrl-E
Find	ctrl-F	apple-F	ctrl-F
Glossary	ctrl-G	apple-G	ctrl-G
Insert	ctrl-I	apple-I	ctrl-Q
Left delete	<-	DEL	<-
Left move	ctrl-L	apple-L or <-	ctrl-L
Left move 10	shift-ctrl-L	apple <-	
Move para.	ctrl-M	apple-M	ctrl-A
Put to disk	ctrl-P	apple-P	ctrl-P
Right move	ctrl-R	apple-R or ->	ctrl-R
Right move 10	shift-ctrl-R	apple-->	
Right delete	->	apple-DEL	->
Set tab	ctrl-S	apple-S	ctrl-S or pause
Tab	ctrl-T	apple-T or TAB	ctrl-T or TAB
Up one line	ctrl-U	apple-U	ctrl-K
Up 10 lines	ctrl-^	uparrow	ctrl-N
Wipeout	ctrl-W	apple-W	ctrl-W
X - mark	ctrl-X	apple-X	ctrl-X
Y remove ulin	ctrl-Y	apple-Y	ctrl-Y
Z underline	ctrl-Z	apple-Z	ctrl-Z
printformat	ctrl-zero	apple-zero	underline key
embed control	ctrl-*	apple-*	ctrl-@

PANASONIC KX-P1091

Supports: PI (10 & 12) LS (6 & 8) SH EC NE BF NB DW SW SU SD
Use BK to return from either sub or superscript. RD= near ltr.
quality (10 pitch only, turn off by resetting pitch). Z1=
compressed on, Z2=off. Z3= italics on, Z4=off. Z5= proportional
on (turn off by resetting pitch). Z6= disable end of paper alarm
(for CS), Z7=enable again. Printer must be set to "Std.-Pgm."

TALLY MT160I & MT160L

Supported: LS PI (PI15 gives 16.7 cpi) DW SW EC NE SU SD, BK turns off either sub or superscript. RD = proportional on; to turn it off use Z1, Z2 or PInn.
Z1 = draft quality, Z2 = correspondence quality (on 160L) Note: pitch changes always return to draft quality; use Z2 after any pitch command to keep correspondence quality turned on. Z3 = disable out-of-paper alarm during cut sheet operation. Z4 = auto justification on, Z6 = auto justification off; set right margin by embedding ESC[;nxs (where x= right margin) before trying auto justification.
Note: printer must be set up to use the "E-code" options.

ZARDAX PRINT COMMANDS

LMn	Left Margin
RMn	Right Margin (relative to the left margin)
FLn	Form Length — length of sheets in lines
PLn	Page Length — number of lines printed on page
CO	Continuous computer stationery
CS	Cut Sheets — separate sheets of paper
PNnn.cc	Page Numbering — declare + switch on
NN	No Numbering — switch off numbering
FD	Footer Define
FO	Footer On — switch on current footer
NF	No Footer — switch off current footer
HD	Header Define
HO	Header On — switch on current header
NH	No Header — switch off current header
NP	New Page — go to top of next page
CPn	Conditional Page — newpage if less n lines
SKn	SKip n lines or to top of next page
MAn	MArgin — temporarily change left margin
INn	INdent — same as MArgin but delayed
DS	Doublespace printing
SS	SingleSpace printing
SH	Space-and-a-Half printing
JU	JUstify right margin
NJ	No Justify — turn off justification
TAn	TAb across to position n
CE	CEntre short lines of text
NC	No Center — turn off centering
RL	Ragged Left — make the left edge ragged
RR	Ragged Right — restore ragged right
BF	Bold Face — turn on boldface printing
NB	Not Bold — turn off boldface printing
DW	DoubleWidth — turn on doublewidth printing
SW	SingleWidth — turn off doublewidth printing
EC	Enhanced Characters — turn on
NE	Not Enhanced — turn it off
SU	Shift Up — before superscript, after sub
SD	Shift Down — after superscript, before sub
PIn	PItch — 10, 12 or 15 characters per inch
LSn	Line Spacing — 6 or 8 lines per inch
ST	STop printing
RD	ReD printing
BK	BlacK printing
z1-z7	Programmable

EC = Word Proc.
SD = 10 PI corres.
RD = Prop. ON - Not Good
BK = Auto Just. ON. I Chooses Margins
Z2 = Correspd. Quality

Edit-Mode Commands

CTRL-U	Up. Move up one line and to the left of screen.
CTRL-D	Down. Move down one line and to left of screen.
CTRL-L	Left. Move one position to the left.
CTRL-R	Right. Move one position to the right.
CTRL-^	Up ten. Move up ten lines.
CTRL-v	Down ten. Move ten lines down.
CTRL-B	Beginning. Go to the beginning of the document.
CTRL-E	End. Go to the end of the document.
CTRL-T	Tab. Tab to next screen tabstop.
CTRL-S	Set tab. Set a tabstop here.
CTRL-C	Clear tab. Clear a tabstop here.
➡	delete the flashing character (cursor).
⬅	delete the character before the cursor.
CTRL-M	Move. Move this paragraph up or down.
CTRL-W	Wipeout P (paragraph) A (all above) B (all Below) S (section from here up to a mark)
CTRL-F	Find and replace a word or phrase. Searches downwards from the present position.
CTRL-I	Insert a disk document at this spot.
CTRL-X	Mark this spot for Wipeout or Put.
CTRL-P	Put. Save the section from the mark down to here. Used for moving or copying sections.
CTRL-G	Glossary item. Insert a glossary item here.
CTRL-Z	Underline this letter.
CTRL-Y	Remove this underlining.
ESC	Go to inner menu.

Special keys

CTRL-ZERO	Marks the next two characters as a printer command.
CTRL-4	Non-printing separator (See page 4-25)
CTRL-5	Unbreakable space (see page 4-25)
CTRL-*	For sending control codes to the printer, causes the following character to have 64 subtracted from its ASCII value. Thus, this code followed by an A will send control-A to the printer (decimal value 1). This code followed by a B will send control-B (decimal value 2) etc. Note especially that this code followed by a [will send an Escape (decimal 27) to the printer.

CTRL with 1 3 6 7 8 9 respectively produce \ ^ [ ] { }

Printer commands

All printer commands must be preceded by the special character CTRL-ZERO. Some printer commands must be followed by a number. Not all commands work with all printers.

The Main Menu

C — Create. You wish to write a new document. You will be asked for its name. Erases any document currently in memory. To abort, press ESC.

P — Print. Print a document from the disk. You will be asked to indicate the code of the document. Erases any document currently in memory. To abort, press ESC.

M — Multiprint. Print a linked list of documents. Enter the code of the file which contains the list. Erases any document currently in memory. To abort, press ESC.

V — Videomultiprint. Multiprint to the video display rather than to the printer.

R — Retrieve. Retrieve a document from the disk and go to edit-mode. Enter its code. Erases any document currently in memory. To abort, press ESC.

T — Transfer. Make a copy of a document on another disk. Enter its code. Erases any document currently in memory. To abort, press ESC before entering the code. This command cannot be aborted once you have entered the code.

D — Delete. Delete a document from a diskette. Enter its code. To abort, press ESC before entering the code. This command cannot be aborted once you have entered the code. This command will not delete a document which is locked.

L — Lock. Lock a document on the diskette. Once a document is locked, it cannot be deleted, and a document with the same name cannot be saved on this disk (unless the Unlock command is given). When a document is locked, an asterisk is shown to the left of its name.

U — Unlock. Removes the lock and allows deletion or saving.

G — Glossary. Load a glossary. Erases the glossary in memory. Erases any document currently in memory. Abort by pressing ESC before you enter the code.

N — Newdisk. Format a new disk. If the disk was used before, erase it entirely. To complete the command, you must press *. Pressing any other key aborts the command. Note that you must hold <shift> in order to press *.

I — Index. Print a list of the documents on this disk. The printer must be switched on. To abort, press Ctrl-RESET.

E — Exit. Exit Zardax. You have to press Y to confirm you really want to exit. You should then insert another program disk (not a document disk) and press Ctrl-RESET.

Z — Current drive declaration. You will then have to enter slot, drive and volume values. For example 610 means slot 6 drive 1 volume 0

Y — Transfer drive declaration. Declares the destination slot, drive and volume for subsequent Transfers.

ESC — Go to inner menu.

<space> — Shows the list of documents on a disk. Each document is given a size in sectors. Free space in sectors is shown near top of screen.

The Inner Menu

C — Change. Go to edit mode. You can do this to change the document by adding to it or otherwise editing it. Or you may press C merely because you wish to look at the document.

D — Draft. Same as a print command (prints the document in memory) but only one copy. Starts printing immediately, from the beginning of the document. (Labels) are printed without alteration. Press ESC to abort. Press P to pause.

M — Main Menu. Go to the main menu. This command does not erase the document in memory, however many of the main menu commands will do so. Be careful. You are recommended to save the document before going to the main menu.

P — Print. Print the document in memory. You will be asked how many copies, and what page to begin printing at. (Labels) will be replaced with information from the keyboard or a disk-file. To abort, press ESC. To pause, press P.

R — Rename. Change the name of the document in memory. Useful when you wish to save a document without erasing one on the disk which presently has the same name.

S — Save. Save this document on the disk. Erase any document with the same name. ESC is alive during a save and would cause a (very confusing) partial abort.

V — Videoprint. Prints a copy of a document on the screen as it would be formatted if printed. Press ESC to abort. Press <space> to pause and restart. While paused the arrows allow you to change position.

Z — Current drive declaration. Same effect as the Z command in the main menu.

O1 — Same as draft, but permits you to begin printing at a later page than the first.

O2 — Same as videoprint, but permits you to begin the videoprint at a later page than the first.

O3 — Write a formatted copy of the document on the disk. Useful if you wish to transmit the document to another computer by telephone. If you don't want inter-page gaps include a FLO command.

O4 — Uninterpreted dump to the printer.

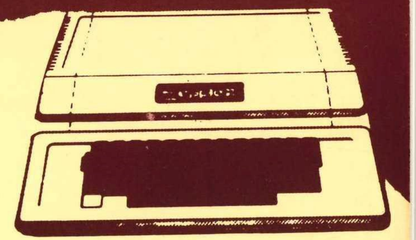
O0 — Continue retrieval of a ''too large'' document. Chapter 9.

NOTES.

When the inner menu is displayed a number indicating the available free space in memory is shown on the screen. This number indicates how many more characters you can type before your document becomes too large.

When a print or videoprint is interrupted with ESC, you may press C to position the cursor at the point in the text where the interruption occurred.

zardax™



Word Processor

Computer Solutions

Made in Australia.

Postal Address:

PO Box 397
Mt Gravatt Q. 4122
Australia

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Limited WARRANTY on media: Computer Solutions warrants the Zardax diskettes to be free from defects in material and workmanship assuming normal use for a period of ninety days after the date of purchase. If during this period a defect occurs, you may return the diskette to Computer Solutions (with dated proof of purchase) for free replacement.
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TABLE OF CONTENTS

Section I

INTRODUCTION

Chapter 1
Prefatory Remarks

ZARDAX is an easy to use Word Processor and Text Editor for the Apple II Plus Computer. Its sophistication makes it as powerful as most Word Processors presently available. Its remarkable ease of use makes it one of the simplest computer facilities yet written.

With this Word Processor, you can edit any text up to 13,500 characters in length on an Apple II Plus, and over twice that length with other hardware installed. You can create letters or other documents and print them on virtually any printer.

The program works well with long or short documents, reports or form letters. Shorter documents can be linked together to form long reports. Or, you can set up a file on your disk with, say, 100 names, addresses and other

information, and then produce 100 personalized letters under computer control. Because the system uses standard Apple DOS text files, you can write other computer programs to manipulate such files (sort, search etc).

BEFORE YOU START

If you have never used a computer before, you should have confidence. Nothing that you can type on the keyboard will break the computer or the **ZARDAX** program. Until you have some experience, you will be a little slow and you may make some mistakes that will inconvenience you, but you will cause no damage to the machine itself. (Unless you express anger with an axe in your hand!)

If your copy of **ZARDAX** has not been used before, you will need to install it. Chapters 17 and 18 will need to be read and acted upon before you proceed with chapter 2.

Chapters 2,3 and 4 are intended as a gentle introduction to use of **ZARDAX**. They will teach you enough to be able to use the system quite effectively, but they do not introduce you to all the capabilities present. You are advised to practise with the machine and use each new command as it is introduced to you.

You will need your copy of the **ZARDAX** disk, this manual and one or two new blank disks. It will also be helpful for you to have close by all the other manuals you received with your computer and its parts.

You are advised to limit your initial use of the system to those facilities which are described in the first few chapters. Only later should you launch into the deeper water which follows.

Section II
Zardax Tutorial

Chapter 2
Introducing the Computer

COMPUTERS

A computer is a machine which tends to intimidate the newcomer because it appears to have a mind and intelligence of its own. However it is important to realise that a computer is a mere machine which, like other machines, is neither conscious nor intelligent. Its apparent intelligence is due entirely to the ingenuity of the program which drives it.

There are two important persons related to any particular computer in its daily use. The first is the user - that's you. The second is the programmer who wrote the program which drives the machine. If you don't like the way a particular computer does things, you should probably blame the programmer rather than the designers of the machine itself. The only defence the programmer may have is that the machine may have been so badly designed that a good program is impossible.

What then is a computer? Some people would call it an "imagination machine". They mean that the programmer can use his imagination to devise an enormous variety of things for the machine to do. It's probably more accurate to describe a computer as an "almost anything machine". Its electronic state is determined by a set of codes called a 'program'. Its electronic state can physically control devices like printers and video displays.

PROGRAMS

Computers store programs in electronic circuits called "memory". Most computer "memory" is volatile, that is, its contents are lost if the source of electric power is removed. Programs are commonly stored on magnetic tapes or

disks, and "loaded" into the computer's memory after the power is switched on. Once it is loaded and started, the program then determines exactly what the computer will do.

The program may run the computer at a very fundamental level. For example, the words which appear on the video display are made up of a complex pattern of dots. The computer does not know what the dots mean. The program determines which dots will be located at which spots. The programmer and the user know that the patterns of dots symbolize letters and words, but the computer knows nothing.

The user of the computer does not have unlimited power. The programmer has made a set of decisions about how the computer may be used and how it may not. The programmer should tell the user what the "system" will do. The system is the combination of computer and program.

The programmer does not have unlimited power either. He cannot, for example, write a program which is too large to fit into the available memory of the computer. He cannot get the computer to do things which it is physically incapable of. The programmer is required to make a large number of decisions. He might, for example, have to decide that while a particular function would be useful, there are other more important functions more worthy of the limited memory space of the computer. Thus every program is a reflection of the judgements, and perhaps prejudices, of the programmer.

THE KEYBOARD

An important part of the Apple II computer is its keyboard. The keyboard is on the front of the computer case. If you

were to look inside the case, you would see that the keyboard is attached to the computer via a cable.

Programmers can make the keyboard respond differently according to what the programmer wants. Therefore you cannot assume that particular keys always cause the same action with different programs. This is one of the most difficult things to get used to with computers. The keyboard does what the programmer says it will do.

The description which follows applies to the action of the keyboard when it is used with ZARDAX. When used with other programs, it may behave quite differently.

Most of the keys behave as they do on an ordinary office typewriter. The SHIFT keys (two of them) cause the keyboard to produce upper case characters if the SHIFT key is held down while the letter-key is struck. It is not sufficient to press and release SHIFT and then press the letter-key. The SHIFT key must be **held** while the other key is pressed.

If the SHIFT key is pressed and released by itself, it causes "shift-lock" to be released.

If the CTRL key is pressed and then released, it causes "shift-lock". This means that all letters pressed thereafter will be produced in upper case. The only way you can return to producing lower-case letters is to release shift-lock by pressing and releasing the SHIFT key.

You will find that there are some parts of ZARDAX which will not allow you to use lower-case at all. But mostly it will be your choice whether or not you type in upper or lower case.

Another thing you will find is that when the SHIFT and CTRL

keys are used by themselves to lock or release, they make a distinctive beep. You will soon come to recognise the difference between the two beeps, and you will then easily notice if you have accidentally pressed one of these two keys.

The CTRL key also has another function. It can be used together with other keys to give special commands to the system. When it is used in this way, it works a little like the SHIFT key in that it is of no use to press and release CTRL and then press the command-key. You must hold the CTRL key down while you strike the other key, and only then release CTRL. For example, when you wish to use the command CTRL-B, you have to put one finger on the CTRL key and leave it there while you press the B key.

Another special key on the left of the keyboard is the ESC key. You will find that this key can often be used as a "stop" command. ZARDAX gives it no other meaning, although other programs often use it for other things. By the way, ESC stands for ESCape.

On the top right of the keyboard is a key marked RESET. This key stops the computer doing whatever it is doing, and allows you to start again. It returns you to the "inner menu" - we'll find out what that is later. It is a very bad idea to use RESET when the disk drive is working! Your recorded documents could all be erased. At other times, the RESET key can cause no harm.

Because many people press RESET accidentally, Apple have put a switch in their newer models which can be set such that RESET will work only when pressed together with CTRL. It is a good idea to check that this switch is set. Your dealer will show you how to check it.

Below the RESET key is the RETURN key. It usually functions like the carriage-return on a typewriter. It moves your typing position down one line and to the beginning of the line.

The RETURN key has another function also. You use it to show the end of your reply to some question the computer has asked you.

To the left of the RETURN key is the REPT (repeat) key. This key is used in conjunction with another key and causes that other key to be repeated at a fast rate. For example, to enter a line of asterisks you would put one finger on the SHIFT key, another on the * key and a third on the REPT key. When enough asterisks have been entered, remove your finger from the REPT key.

Below the RETURN key there are two arrows. These are destructive arrows. They remove letters from the screen. The arrow pointing left removes the letter **before** the cursor (the cursor is the flashing square on the screen). The arrow pointing right removes the letter the cursor is on.

Some keys on the keyboard have two symbols on them. For example, most of the number keys have another symbol. The number 4 has the $ sign above it. To get the $ you must hold the SHIFT key while pressing the 4.

Likewise the punctuation keys have other symbols on them. For example the ; has a + above it. To get the + you must hold the SHIFT key while pressing the ; key.

Three of the letter keys also have other symbols on them. The G key has BELL written on it. But the BELL key is inoperative when ZARDAX is running the computer. The other two symbols which occur on letter keys are the @ above the P

and the ^ above the N. To get these two symbols, you must first shift-lock using CTRL by itself, and then use SHIFT in conjunction with the key.

There are other symbols which can be typed on the keyboard, but which are not marked on it. These keys are mostly the number keys, and must be pressed while holding CTRL. For example press CTRL together with the number 1 and you get a \. With 3 you get `, with 4 a |. With the keys 6789 you get the brackets []{}. With 5 and zero you get special symbols which we'll find out about in chapter 4. And with * you get another special key which is also explained later.

A final important note about the keyboard. You must become aware of the difference between 0 (zero) and O (letter Oh). If the computer is expecting you to type a number and you type an O (Oh), the computer will become confused. As far as the internal workings of the machine are concerned, these are quite different symbols. Likewise do not confuse the symbols l 1 I. Be careful to type the one you mean!

THE VIDEO SCREEN

The video screen allows you to see what the computer is doing and allows you to see the effects of many commands you give to the computer.

Normally the Apple screen displays upper case letters only, but with ZARDAX a special mode of operation called "hi resolution graphics" is used to draw the letters on the screen. This allows ZARDAX to operate with lower case letters also. Most other programs you use with your Apple computer will operate only with upper-case letters.

The Apple computer allows only 40 characters to fit on one

screen line. The big advantage is that the characters are large and very legible. The disadvantage is that most of the things you write will be formatted to print on lines 60 or 70 characters long. We will find out later how ZARDAX allows you to write long lines on such a narrow screen.

It is now possible to purchase plug-in accessories for the Apple which allow it to display lines 80 characters long on the screen. These accessory boards cost around $300 and bring with them considerable advantages when used with ZARDAX. It is easier to envisage what your text will look like when printed. However, the disadvantage is that legibility is reduced due to the smaller characters. Because of this, some people prefer to use ZARDAX with the standard Apple 40 wide display, even though they could easily afford the extra cost of the accessory board.

It should be pointed out here that ZARDAX will not work with all the 80-column accessory boards which are available. And it does not work equally elegantly with the ones nominated in chapter 23. You are strongly advised not to buy an 80-column board to use with ZARDAX until you have actually seen it in use. You should do some comparison shopping.

DISKETTES AND DISK DRIVES

Attached to your Apple via a cable and sitting beside or on it is a disk drive (or maybe two). The drive is a small metal box smaller than a shoebox. On its front end it has a horizontal slot with a small door which may be opened to insert diskettes. The door has to be closed when a diskette has been inserted. Also on its front end, the drive has a small red light with the words IN USE nearby.

A disk drive is a little like a tape recorder. It can both record and play back.

But it does not use tapes. It uses diskettes. A diskette is a small disc made of plastic similar to the substance used to make ordinary audio tapes. The diskette is completely enclosed within a square case (usually black). The whole case is kept in a paper sleeve. When you wish to use the diskette you remove it from the paper sleeve, but you should never try to remove the diskette from the square case you find it in.

The square case has a number of cutouts through which you can see the gray recording surface of the diskette itself. It is quite easy to damage this surface so you should not touch it with your fingers or allow any dust to come in contact with it.

The recorded information can also be damaged by magnetic fields or heat, so you should be careful not to place a diskette on a television receiver or any other object likely to emit a magnetic field.

When the diskette is put into the disk drive, a spindle engages the center hole and spins the diskette without

spinning the square case. A record/playback head is positioned above the long cutout on the case.

On one side of the diskette case, a small notch has been cut out. This notch is called the "write-protect" notch. If it is covered with tape, it will prevent anything further from being recorded on that diskette. You would cover this notch with tape when you wanted to prevent any accidental recording on a diskette. You can later record on that diskette again providing you remove the piece of tape covering the write-protect notch.

To insert the diskette in the disk drive you must first open the drive door. It is important to insert the diskette with the correct orientation. One side of the diskette has a label put there by the manufacturer. When the diskette is inserted this side must be upwards, that is, facing the sky!

When you insert the diskette, you should hold it with your thumb on the label so that, when it has been inserted, the label is near to the door. Once it is inserted, you should close the door. Closing the door engages the center spindle and enables the disk drive to spin the diskette. The computer cannot playback or record the diskette if the door is left open.

Some diskettes come with a little reinforcing hub around the center spindle hole. Some do not. You will find that diskettes with this reinforcing hub are more reliable than ones without.

When you purchase a new diskette it is not immediately usable in your machine. It must first be "formatted" or "initialized". This is a process which takes less than a minute and ZARDAX has a command which enables you to

initialize new diskettes. **Be warned** that initializing diskettes which have been already used causes the entire erasure of the diskette. Sometimes you would want to do this as a fast way of totally erasing a diskette. But it is disastrously easy to make a mistake and erase a diskette you wanted to keep. Be careful when initializing diskettes.

Once again, a reminder that disks can be damaged. So:

1. Always be careful not to place disks near any magnetic object, as they may be partially or completely erased. Speakers, parts of TV sets or monitors, magnetic paperclip holders, etc. can cause havoc.

2. Do not subject disks to any physical abuse (pins, dust, finger prints in the cut out holes, coffee etc). Keep disks in their paper covers when not in use, preferably in a suitable disk holder or case. The Apple DOS manual has a good section on the care of disks.

3. If you <u>do</u> "crash" a text disk so that the program can't read it, or the disk just growls at you, try moving to the main menu (see below) to view the catalog of the disk. If it still doesn't respond, then do **not** try to save anything else on that disk. Insert a different disk and save your text. An expert Apple user or your local dealer may be able to reconstruct the bad disk.

4. Point three should be ample motivation to <u>back up</u> your disks. The "transfer" command in the program is designed just for this. At the mimimum, use a "working" disk and one "archive" disk. Important text should be saved on two different archive disks, perhaps even stored in different places, up to and including a bank vault! When you are writing long text, save every so often. How often? -- how much can you afford to

re-type? At the end of each session, or every hour or so, back up the working disk file onto the archive disk. Make this a habit from the beginning.

5. If necessary, Computer Solutions will replace a damaged ZARDAX disk. Simply return the bad disk, together with the service charge.

FILES AND DOCUMENTS

The basic unit of information you will be working with is called a file or a document. The word document is used throughout this manual to refer to some typed information which you are entering into the computer or which you have already recorded on a diskette. A document is a particular kind of file. Files also include non-documents which may be recorded on the diskette, like programs. ZARDAX itself is stored on the diskette as a file, but we would not call it a document.

ZARDAX can show you what documents are recorded on a diskette, but it will not usually show you other files which may be on that diskette. Sometimes it will however show you the names of files which have been put on the diskette by other programs. While you may retrieve such files and look at them, it may be dangerous to alter them unless you really know how the program that recorded the files works.

When you type a document into the computer using the keyboard, it is **not** automatically recorded on the diskette. If you do not specifically record it on the diskette before switching off the power or otherwise erasing it, that document will be irretrievably lost.

If you retrieve (playback) a document from the diskette and

make alterations to it, the altered document is not automatically saved (recorded) onto the diskette. Once you do save it the old version of that document is entirely erased and the new version recorded over it.

If you create a new document which has exactly the same name as an existing document and record it, the existing document with that name will be entirely erased and recorded over.

A final word of advice. It is a good idea to keep separate the diskettes you use for storing ZARDAX documents from the diskettes you may use for other purposes. In particular, you should never record any documents on the ZARDAX diskette itself (an exception is noted in chapter 6). Likewise you should never delete (erase) anything on the ZARDAX diskette itself.

THE PRINTER

Attached to your computer via a cable is a printer. The printer has a separate power cable which must be connected to a power outlet. The cable coming from the printer to the computer connects to an electronic circuit in the computer case. This circuit is called an interface. The interface allows the computer and the printer to communicate.

ZARDAX works with a large variety of printers and interfaces, and this makes it difficult for us to tell you much about your printer in this manual.

ZARDAX does assume that your printer is one of two fundamental types. It is either one of the nominated "letter-quality" printers (like a NEC Spinwriter or a Qume Sprint 5 or some other "Diablo-compatible" printer) or it is not. If it is one of these nominated printers then most of

the commands available with ZARDAX will work directly. If it is not, then not all the commands will be able to be used, or at least it may require some special programming to implement them. See Chapter 25 for the Epson MX-80 example.

It is important for you to read your printer manual carefully. Especially you should read those sections concerning how to put paper into the printer and how to replace the ribbon and how to use any switches.

ZARDAX usually assumes you are using "continuous stationery", that is paper which has successive sheets joined with perforations to be torn apart after the printing is done. If you are using separate sheets of paper, you will have to find out how to use the CS (cutsheets) command which will be described later.

WHAT IS A BUFFER?

A buffer is a kind of memory circuit which is inside the printer. Knowing what it does will help you understand some actions by ZARDAX and your printer which would otherwise be quite mysterious.

When ZARDAX wants to print a document, it does so by sending each character in turn along the cable to the printer. The problem with this is that ZARDAX could print a whole page in about a second but no printer could be expected to keep up with it.

If a printer had no buffer (and some do not), it would send a WAIT signal to the computer while it was still printing the character last received. This WAIT signal would tell ZARDAX to hang around and do nothing for a while until the

WAIT signal is removed. Then when the printer was ready to receive the next character it would remove the WAIT signal, and ZARDAX would know to send the next character.

If your printer has no buffer it will operate like this and there will be no mysteries for you to unravel.

But if your printer has a buffer, it will be able to tell lies to ZARDAX. What it will do is this. When it receives a character to be printed, it will store it in the buffer memory so that it can be printed when its turn comes. Then it will transmit no WAIT signal to the computer, but will instead transmit a signal telling the computer the big lie - "last character has been printed, send the next one."

If the printer has a large buffer (say 2000 characters), it can therefore have persuaded ZARDAX that those 2000 characters have been printed. If you then told ZARDAX to stop printing, ZARDAX would then immediately stop sending more lines of characters to the printer, **but the printer would not stop.** It must go on printing out the characters it has stored in its buffer, the characters it falsely told ZARDAX it had already printed. Your printer may have a "clear" key which enables you to stop this effect.

All this makes buffers sound like they are to be avoided. However buffers can be very useful. Let us suppose that you want to print a document containing fewer than 2000 characters, and your printer has a buffer memory for 2000 characters. Then ZARDAX would think it had printed the whole document in less than a second or two, and would allow you to do something else. Meantime while you are typing a new document, the printer is still happily printing the previous document which it has stored in its buffer.

If the total length of the document is greater than can be

held in the buffer, then the printer will send a WAIT signal when the buffer gets full. In these circumstances, the printer will allow the computer to send the next character only when there is a space for it in the buffer.

Chapter 3
Introducing Zardax

STARTING THE SYSTEM

When we turn the power on to the computer, we are **booting** the system. This horrible word simply means that we are causing the system to start up. For the system to start correctly, it is necessary that we have a program diskette in the disk drive when the power is turned on. It is not sufficient to have just any diskette, for example a document diskette will not allow the system to boot correctly. If you want to use ZARDAX, you must boot with the ZARDAX diskette in the drive.

But, you say, which one? There are two ZARDAX diskettes supplied with this manual. Well, those two diskettes are exactly the same. You have been supplied with two copies so that you can use one and keep the other as a spare or "backup" copy. You will remember from the last chapter that diskettes can be ruined. It would be a shame if your ZARDAX diskette was ruined and you had no backup. You should keep your backup copy of ZARDAX in a safe place, maybe a bank vault. If your first copy is ever damaged (not very likely if you exercise reasonable care), you can simply get the backup copy, install it as described in chapter 18 and start to use it. Then return the damaged copy, with service payment, to Computer Solutions (or a distributor) and we'll send you a new copy to put in your bank vault as a backup. Please note that dealers can not supply such replacement copies. You must get them from a distributor or from Computer Solutions.

So, put your copy of ZARDAX into the disk drive (see chapter 2 for details about inserting diskettes into the drive) and close the door and switch on the power.

If when the drive stops spinning, the screen has a heading referring to the word SETUP then this copy of ZARDAX has

not yet been installed. See chapter 18.

Assuming installation has already been done, you will find that it takes about 30 seconds to complete the boot process. Then the disk drive will stop spinning and the screen will show a display called the **Main Menu.** It's called a menu because it gives, down the left side, a list of options from which you may choose. We will gradually find out what each of these options does.

```
                  Code  Document      Notes
   808            A1    TITLE         MANUAL
OPTIONS:          A2    CHAP1
                  A3    CHAP2
Create            A4    CHAP2.2
Print             A5    CHAIN2
Multipr           A6    CHAP3
Vidmulti          A7    CHAP4
Retrieve          B1    CHAP4.2       INCOMPLETE!
Transfer          B2    CHAP4.3

Delete
Lock
Unlock

Glossary
Newdisk
Index
Exit

Which?
```

On the right of the Main Menu you will see a list of names. On the ZARDAX disk itself, the list (or CATALOG) will be different from the one shown here. Each disk has its own list of documents which are recorded on it.

THE MENUS

This Main Menu is one of two menus that exist. Each menu offers you choices. Now you can easily have a look at the other menu by pressing ESC.

```
)PTIONS:

     Change
     Draft
     Main Menu
     Print
     Rename
     Save
     Videoprint

Which?
```

6976

Document Name: CHAP3

This menu is called the Inner Menu and appears a lot less cluttered than the Main Menu. We'll find out more about it later. Now press **M** to go back to the Main Menu.

Each of the options shown to you on the left side of the Main Menu represents something you can do. To make a choice, you simply press the first letter of the option you want. We are gradually going to learn the effect of each

of these options. The first option we are going to learn about is the **Newdisk** option. It allows us to format or initialize diskettes so that we can store documents on them.

INITIALIZING DISKETTES

You will not be saving (recording) your documents on the ZARDAX disk itself. You will use other diskettes. We will call them "document diskettes". So you can now get out a new diskette. Remove the ZARDAX diskette and insert the blank one in its place, and close the door. Now if you were to press the space-bar at the bottom of the keyboard, ZARDAX would attempt to find out what documents are already recorded on your new diskette. But there are no documents there. Furthermore, the diskette isn't even formatted yet. ZARDAX would decide (after some groaning from the disk drive) that something had gone wrong. Try it. Press the space-bar. It sounds as though the disk drive is very sick, but it's OK. After a little while the disk drive will stop and ZARDAX will announce a DISK MALFUNCTION.

You need to realize that a totally blank diskette is of no use to your Apple. It needs to be set out magnetically in much the same way as you might draw lines on a blank page before you actually start to write.

One of the options presently on the screen before you is called "Newdisk". You can command any of these options : pressing the first letter of its name. So press "N".

One of the effects of this Newdisk command is that it erases old disks and sets them up again from the beginning. This is something that you might sometimes want to do, if you no longer want to keep some documents. However, you

run the risk of using this command accidentally on a diskette you do not want to erase. To cut down the possibility of this kind of accident, the system demands that after you press N for Newdisk, you should then press *. This requires that you press two keys (SHIFT and *) and is not likely to be done accidentally. However, you still need to be very careful. It is surprisingly easy to make a mistake and erase a great deal of hard work.

To protect particularly valuable full diskettes, you should put a write protect tab or piece of strong tape over the "write-protect" notch. This will physically prevent the computer from erasing or recording on the disk, though you can still retrieve documents from it. You should also keep second and third copies of your valuable documents, as noted earlier.

The process of setting up your new diskette should take about a minute. When it is ready, the list of options will again appear on the screen, together with a number indicating the number of available sectors on the diskette. An empty diskette has 528 sectors. Each document you write uses one sector to start with, then as many sectors as necessary to store your words. A sector can contain about forty or fifty words. You don't have to worry about dividing your documents up into sectors. The computer does that for you. The only reason for having the sector count on the screen is so that you will know approximately how much space remains on the diskette, and how big your documents are.

TRANSFERRING DOCUMENTS

One of the options on the disk is called **Transfer.** But as you can see on the screen, there are no documents on your

new diskette for you to transfer. When you do a transfer you will be making a copy of a document from one diskette to another. Transferring a document does not erase it from the first disk, it simply makes a copy of it on the other disk.

We are now going to transfer (copy) some documents from the ZARDAX diskette to your empty diskette. Firstly remove your disk from the drive and insert the ZARDAX disk. Then press the space-bar and you will see again the names of the documents on the ZARDAX diskette. Incidentally if there are more documents on a disk than can fit on the screen, you can see the rest just by pressing the space-bar again.

You should transfer all the documents which have SAMPLE as part of their name. Now decide which document you are going to transfer first. Now press T. Immediately the computer will ask you which document is to be transferred. When answering this question, you should refer not to the name of the document, but to its code. Do not press RETURN after answering this question. Now answer the question. The disk drive will spin briefly and then a message will appear on the screen asking you to insert the disk you want to make the copy to. So then, insert your disk and close the door. Then press the space-bar to make the copy. When the copy is complete, the main menu will reappear showing the list of documents on your disk. Just one document - the one you just transferred.

Now remove your disk, insert the ZARDAX disk and press the space-bar again. That gives you back again the list of documents on the ZARDAX disk. Now decide which document you want to transfer next. Transfer that document in the same way as before. Keep doing this until all the SAMPLE documents have been transferred. Then put the ZARDAX disk away in its paper sleeve, and leave your disk in the drive.

WHERE DO WE GO FROM HERE?

The next chapter will give you enough information to be able to use ZARDAX. In fact many users of the program will need to read no further than chapter 4. Not all the features of the program will have been mentioned by the end of chapter 4. But for most use of the program, the features mentioned in chapter 4 will be quite adequate. As you get more used to ZARDAX and as you want to do more specialized things you can then read later chapters and gradually increase your knowledge of the facilities available to you.

CREATING A NEW DOCUMENT

The list of options you see down the left of the screen is called a "menu", because you can select from it whatever you want. This is the "Main menu". We have also briefly seen the "inner menu" in the previous chapter. We have already selected Newdisk and Transfer and seen their effects. Now we will select Create, and learn how to write a letter or other document. Press "C".

The system now asks you to give your document a name. The name of the document must start with a letter and can be up to eight characters long. If it is fewer than eight, you should press the 'RETURN' key to indicate that you have finished writing the name. If you make a mistake in typing, you should press the 'left-arrow' (backspace) as many times as necessary and then retype.

Call this document "TEST1". Type TEST1 and then press RETURN.

After you have entered the name, the system will ask you to enter some notes. The notes may be up to eleven letters long. If you enter fewer than eleven, you should press 'RETURN' to indicate that you have finished. If you wish to enter no notes, simply press 'RETURN'. You may find it useful to use this space to enter information about the document, such as its author and the date of creation.

Actually in many ways the system will regard the "notes" as part of the name. The 8 characters you typed as the name, followed by one space, followed by the eleven characters you entered as the notes will be put together and considered to be the complete name of the document.

When you have entered the name of your new doocument the program moves automatically to the place where you write and edit text. The name of your document now appears at the bottom of the screen in a rectangular box, together with the number "1". This number indicates the character position in the present paragraph of typing. As you commence to type you will see the number change to keep count of where you are up to in your paragraph. The flashing **cursor** is at this position. It will move ahead of you as you type, indicating the place where your keystrokes will go. Now you should start typing some practice text. Copy this page if you can think of nothing better.

As you type, you should use the SHIFT key normally. If you press and release CTRL, the key above the left shift, you will hear a little beep, and the computer will produce only capital letters. The CTRL key is like the SHIFT LOCK key on a typewriter. To unlock, you should press and release SHIFT by itself. It makes a different kind of beep, more like a chirp. If you are used to typing on an office typewriter, so much the better: ZARDAX is designed to shift and lock just that way.

If you are working on a standard, 40-column Apple, you will notice that spaces are indicated on the screen by a point smaller and higher than a period. Carriage-returns in your text are shown as a left-arrow. Spaces are simply blanks on the 80-column systems -- it all depends on the wa characters are defined by the 80-column board itself.

When your typing reaches the right side of the screen, the next letter appears on the next line. This usually means that a word has been split. However you do not need to take any action because the system will automatically format your document when it is being printed. Let's repeat that

for emphasis: you simply type a paragraph, or until you want a line to end. The program will automatically divide paragraphs into lines, depending on the margins you set up (this comes later).

When you have typed for some time, your screen might look like this:

```
hen·your·typing·reaches·the·right·side·
f·the·screen,·the·next·letter·appears·o
·the·next·line.·This·usually·means·that
a·word·has·been·split.·However·you·do·n
t·need·to·take·any·action·because·the·s
stem·will·automatically·format·your·doc
ment·when·it·is·being·printed.··Let's·r
peat·that·for·emphasis:·you·simply·type
a·paragraph,·or·until·you·want·a·line·t
·end.··The·program·will·automatically·d
ivide·paragraphs·into·lines,·depending·o
·the·margins·you·set·up·(this·comes·lat
r).↵

hen·you·have·typed·for·some·time,·your·
creen·might·look·like·this:■
```

Document Name: TEST1	69

When you mistype a character, you should press the left arrow (backspace) to remove it, and then continue typing after making the correction.

When you have typed a lot of text, some lines will begin to

disappear from the top of the screen. However, they remain inside the computer. You can usually see only a small portion of the document on the screen.

SAVING YOUR DOCUMENT ON DISKETTE

The small document that you have typed is inside the computer, but not yet on the diskette. If there were a power failure now, your document would disappear without a trace. However, if a copy of it were saved onto a diskette, that copy would not be at all harmed by switching off the power supply.

Press ESC. Your document now goes off the screen (but it is still inside the computer's memory). On the screen you can see the **Inner Menu.**

One of the options you are offered is to **Save** the document. If you press S, the disk drive will spin briefly. Your document has now been copied onto that diskette. However, it still remains inside the computer and you can add more to it by choosing the **Change** option: press C. This returns you to the text, ready to type at the end of the text you entered before saving.

Now add another paragraph or two. Remember that you can fix typing errors with the left-arrow. For now, don't worry about "typos" that you don't see until well beyond them (is there any other kind?). The editing features we will cover later will be used for that kind of fix-up. In fact, many word processing experts suggest that you not stop to fix any typos, or even to look at the screen if you are working from a rough manuscript -- just type. It is more efficient to do all your editing in one pass later, rather than to move from entering to editing text at the same time.

It is important to realize now that the copy of your document inside the computer is **NOT** the same as the copy on the diskette. The copy in the computer is now longer, because you added to it since you made a copy onto the diskette.

Now press ESC to move to the inner menu.

If you now were to choose the Save option, what would happen is this: the old copy of TEST1 on the diskette (remember - it was shorter) would be erased and would be replaced by the new copy (the longer version). Even if the new version were a shorter one, it would still entirely erase the old version. Let's do that: Press S.

When the disk stops spinning, press R to **Rename** your document. This will now give you the opportunity to change the name of the document in the computer (but not the document on the diskette). Invent a new name for the document, say TEST2.

Now, when the inner menu reappears, press S, and save a copy of your renamed document.

Now press M to go to the **Main Menu.** On the screen you will now see the list of options which you have seen before on the main menu. You will also see a list of all documents on the diskette, called the CATALOG. This list will show that there are two more documents on the diskette than there were before. The first one is the one you created, typed and saved, then added to and saved again. It has the name TEST1.

The second document, called TEST2, is exactly like the first, because you gave it a different name and then saved

it. We know that it is the same document (it has exactly the same words), but because it has a different name, the diskette "thinks" it is a different document. This explains the fact that the first document was not erased when you saved this one. Erasure only occurs when a document with the same name is saved. In fact, if you saved quite a new and different document which had the same name, then the original document with that name would be erased (unless you saved it on a different diskette).

To the right of the document name is a number which tells you how many sectors the document occupies on the diskette. Our two documents occupy the same number of sectors because they are really two copies of the same document, but with different names. You will notice that there are now fewer than 528 sectors free on this diskette.

To the left of the document name is a two-letter code which the computer has allotted to the document. This code allows you to refer to the document without having to type its whole name.

CHANGING AND EXTENDING DOCUMENTS

We will now retrieve our first document for editing and extension. You should still be in the main menu, so press R for Retrieve.

Now enter the code for TEST1 to tell the computer which document you want to retrieve. The system will now erase the document presently inside the computer's memory and copy TEST1 from the disk into the memory.

When a document is retrieved, the program goes into its text-manipulating section, and the cursor (the little flashing square) is placed at the end of the document. We will now learn how to move the cursor around on the document so that we may change any part of it.

All editing commands consist of a single letter which is pressed while holding CTRL down as though it were a kind of SHIFT-key. We will refer to such commands as CTRL-keys, e.g. CTRL-B means to hold the CTRL key down while pressing B. Release the CTRL key after pressing and releasing the B.

MOVING AROUND IN THE DOCUMENT //E use → ↑ etc.

The command letters are all quite easy to remember. For example, B stands for Beginning, E for End, R for Right etc.:

Beginning
.
Up
Left Right
Down
.
End

Now press CTRL-B. The cursor shifts to the Beginning of the document. Press CTRL-E. The cursor shifts to the End of the document. Press CTRL-B again, to go back to the beginning. Now press CTRL-R. The cursor moves one position to the Right. Press CTRL-R several times.

The REPT (repeat) key can be very helpful. It causes the same key to be repeated at a fast rate. Try it this way:

With one finger on CTRL, put another on R, then put another (got enough fingers?) on REPT. The cursor will zip along to the right at some speed. When you want to stop, release all the keys.

The REPT key can be used with many of the editing command keys, but it will take you some time to become facile with it.

Now try CTRL-L (L for Left), CTRL-U (U for Up), CTRL-D (D for Down).

Continue experimenting with these keys (Beginning, End, Left, Right, Up, Down) until you are confident you can move anywhere about your document.

MAKING CHANGES

Position the cursor at the beginning of a word you wish to change. Now start to type the new word. You will see the text move down and to the right to allow you to insert as many words as you like. You can insert whole paragraphs or pages of information at any point merely by positioning the cursor and typing. The two arrows on your keyboard are destructive arrows. They delete the letter the cursor is sitting on (the right-arrow) or the letter before the cursor (the left-arrow). They are very effective if used in conjunction with the REPT key.

If you are using one of the 80-column accessories in your computer, you may find that you can out-type the computer when you are inserting text in the middle of a long paragraph, losing some of the characters you type. This is because the computer has to "think" about moving those characters, and may not be paying attention when you strike

a key. If this happens, try this: Move to the point at which you want to insert new text, then hit a RETURN. The RETURN character will be printed, and the cursor will move to position one of the next line, just as if you had ended a paragraph -- but it will take all of the text after your insertion point with it. Now press CTRL-L. "Left" from the left margin takes you to the end of the line above, the point at which you entered the RETURN. You can now type at full speed, since there is nothing to push ahead of you. When you are done inserting, Press the right arrow, to delete ahead of you. Presto, the text below is now moved up into the same paragraph again. This takes much longer to describe than it does to do!

Another tip: rather than moving all the way across a line from left to right to get to a change you need to make toward the right of the screen, press CTRL-D to move down to the line below, then back up toward the change point with CTRL-L's. The same thing works the other way, too: to go from right end to the left end, enter CTRL-U CTRL-D, then however many CTRL-R's you need to get there.

After you have had plenty of practice at changing and extending your document, press ESC to get the inner menu and Save your document.

PRINTING YOUR DOCUMENT

There are several printing facilities in ZARDAX. You can "print" to the screen to preview how your formatted text will look on paper (then make any changes needed). You can print a single "draft" copy -- useful for form letters. Finally, you can use the Print command to produce a finished product. Printing can be done from either the inner or main menus. For now we will work with the

document you have created, working from the inner menu.

[NOTE that any print command that tells the system to print starting from a page other than the first might cause the system to "think" for some time before starting!]

VIDEOPRINT

As noted earlier, the way the document looks on the screen when you are entering it or editing it is not the same as the way it will appear when printed. At the time you print your document ZARDAX will decide where to break the paragraphs up into lines and where to break the document up into pages. As we will find out in the section on FORMATTING you can enter commands which will determine how many lines are to be put on each page and so on. The system assumes that there will be 54 lines on each page and that a line can be up to 65 characters long.

Whether you accept these preset values or put in other formatting values yourself, you will often want to see on the screen (before printing a copy) approximately what the document will look like when it is printed. The Videoprint command in the inner menu is designed to give you such a preview.

The videoprint mode is not exactly like the print mode in all respects, but it is enough like it to be very useful. It won't show superscripting or boldface for example (but even your printer may not be capable of these features).

Furthermore if you have a standard 40-column Apple, you won't be able to see the full width of a document which has right margin set to 65 characters. We'll now find out some ways of using Videoprint.

With your text in memory, move to the inner menu (with ESC), and press V for Videoprint. The screen will clear, and your formatted text will "print" to the screen and scroll upward. If you want to stop it to examine something, just press the space bar. Press it (or any key) again and the videoprinting will continue.

If you spot something you need to change, press ESC, and the program will return you to the inner menu. Now press C, and you are returned to the text, with the cursor positioned at the point at which videoprinting was stopped. You can repeat this process until the text "prints" the way you want.

If you are working on a 40-column machine, you are already frustrated: you can't see the right portion of the text, beyond column 40, as the text scrolls by. Try this: press V for videoprint, then immediately press the space bar to stop it. Now press the right arrow. Immediately printing will start again but you will find that the text has "scrolled" horizontally, and that you are looking at the right of the page. Press the space-bar again to stop, then press the left arrow, and printing will resume but you will be looking at the left edge again.

On 80-column machines, the arrows work immediately, and you can scroll the whole screen from side to side one position at a time. To restart printing you must press the space-bar. On 80-column Apples you have less need to scroll videoprinting sideways, especially if you format your text for "pica" (e.g. right margin less than 80). You may need to do so if you are formatting for a Centronics 737 or similar printer, where the smaller proportional type means you will often work with line lengths of 100 or so.

Videoprinting is very useful in finding very ragged right margins caused by the movement of long whole words to the next line of text. You can find such words, then go into the text to hyphenate them. Do this only once you have settled on final text and page widths, however: if you make changes in these, you will no doubt find that the hyphenated word is now in the middle of some line, looking like this: hyphen- ated.

If you give the videoprint command you will find that printing always starts from the first page of the document. There is another inner menu command O2 which allows you to specify the starting page for the videoprint. If your document is say 5 pages long and you know that pages 1-3 are OK, you might want to videoprint starting from page 4. In this case, do not press V. Press O2. Rememeber, as noted above, that causing the system to start printing from the third page or later introduces some "thinking" time. The system will appear to be doing nothing for some time.

DRAFT COMMAND

The Draft option in the inner menu is similar to print, except that it only prints one copy. Also, it ignores the "curly bracket" fields used in defining personalized documents (see chapter 7). If your text contains curly brackets for some other purpose: { } , then you must print that file with the draft option (as this text was).

A particular advantage of using the D command rather than the P command is that the D command does not ask you two questions. If you want to print only 1 copy and you want printing to start at page 1, and there are no labels (chapter 7), the D command is quicker to use than the P command.

Another alternative to the D command is the O1 command which gives you the chance to say that printing should start at some page other than the first. Note that the O1 command (like the D command) assumes you want only one copy, and assumes you don't want labels filled (see chapter 7). [Also see the NOTE above].

PRINT COMMAND

The Print option in the inner menu prints the text currently in memory. It is generally a good idea to save your file before you begin to print it.

When you press P to print your text, the computer will ask you two things:

1. how many copies you want, and

2. the page number at which you want to begin printing in the text.

Then the printing will proceed. Before printing you should check that the printer is turned on, that the paper is set to the correct starting position, and (if your printer demands it) that you have enough fresh ribbon to print the document.

GENERAL COMMENTS ABOUT PRINTING

If at any time you wish the printing to stop you should press either ESC or RESET. Depending on the kind of printer you are using, printing may not stop immediately because some printers have large storage "buffers" (see

chapter 2). When you press ESC, the computer stops sending further characters, but the printer will continue to print until it finishes all those which it had already received and stored. RESET and ESC allows you to restart where you left off, if you wish, by giving another print command, and the page number at which you wish to restart.

You may also stop printing on a page by pressing the R (reprint) key. Then begin printing again by specifying a page number at which to start. This is useful if your printer ribbon runs out, or a page is printed crooked, etc. If you are printing multiple copies using the facilities outlined in Chaper 7, it may be essential that you use R to stop the printing rather than ESC or RESET.

Another key you can use during printing is the P (pause) key, which will stop sending lines to the printer until you press the space-bar or some other key. But such pausing would not allow you to start the printing from an earlier position as the R (reprint) command will.

The R (reprint) command will not work during multiprint (described in chapter 9).

TRYING OUT FORMATTING COMMANDS

Users tell us that it takes longer to learn formatting than editing and other program commands. This is because you don't get immediate feedback about how a given formatting command will look. Fortunately, there is a way to get this feedback, and to test variations in formatting. First, retrieve your test text file. Now, press CTRL-B to go to the beginning of your document. Now press CTRL-ZERO. On

the screen that gives you a funny looking character which looks like this ≡. Actually if you have an 80-column accessory, it will look different but it will have the same effect. What CTRL-ZERO does is that it tells ZARDAX that the following two characters are a format command. We will now use the command RM (right margin). So immediately after the CTRL-ZERO enter the two letters RM. Immediately after that enter the number 37. Go to the inner menu (with ESC), and use the Videoprint command to "print" your text to the screen.

Then go back and change the RM value to some other number (say 30), and try it again. You can see the effect of using the RM command to alter the right margin.

Now many of the commands described below can be tried out by you in this way. As you read each command you are advised to try it out in various ways. Thus you will quickly familiarise yourself with each of these commands. Please note however that as mentioned earlier, not all features work with Videoprint, and not all features may work with your particular printer. When you know how this looks, add other formatting commands to the text, one at a time, and see how these look.

The Samples included in chapter 27 are another way to learn the effects of the various formatting commands.

FORMATTING YOUR DOCUMENT

A variety of formatting commands can be inserted into your document. Such commands always consist of at least three characters. The first character is always the special character CTRL-ZERO. The next two characters specify the command. The letters may be either upper or lower case.

Some commands should then be followed by a number.

The formatting commands are of two general types: 1) those used to format the page itself, and 2) those that format text within the page.

PAGE FORMATTING

First, we begin with the paper itself:

Continuous Forms: ≡CO

The CO command (continuous) tells the system that you have your printer loaded with continuous stationery, and that there is no need to pause after printing each sheet of paper. This state is assumed unless the contrary is selected by the CS command below. Remember, the format is CTRL-ZERO CO .

Cut Sheets: ≡CS

The CS command (cut sheets) tells the system that you are using separate sheets of paper and that it should pause after printing each sheet to allow you to insert a new sheet of paper in the printer.

Form Length: ≡FLn

The FL command (formlength) allows you to specify the length of the paper in lines. For example, FL72 tells the computer that the sheets of paper are 72 lines in length. Computer paper is normally 66 lines (11 inches) in length, and if you give no FL command the system will assume a formlength of 66. Form lengths for mailing labels may be as small as six lines, depending on the label.

Page Length: ≡PLn

The PL command (pagelength) allows you to declare how many lines you want printed on each sheet of paper. For example, PL58 tells the system to print up to 58 lines on each sheet of paper. This leaves spaces at the top and bottom of each sheet. If you give no PL command, the system assumes a pagelength of 54 lines. Notice that the difference between pagelength and formlength is all put at the bottom of the sheet. If you accept the preset values of PL54 and FL66, for example, that gives an inter-page gap of 12 lines. Presumably you want six at the top and six at the bottom. Therefore you should set your paper in the printer to be six lines from the top when you give the Print command. The system will print the 54 lines, then give the 12-line inter-page gap, and be positioned to start printing 6 lines from the top of the next page.

Left Margin: ≡LMn

The LM command (leftmargin) should be followed by a number. This number will be the value of the absolute left margin. The system will print this number of spaces at the beginning of every line. If no LM command is included in your document, the system will assume a left margin of zero.

Right Margin: ≡RMn

The RM command (rightmargin) should be followed by a number, e.g.: RM80 . It sets the right margin so that no printing will be done further to the right than the number that you nominate. For example, the command RM80 means that the printing will be up to 80 characters in width. This value is relative to the current setting of the left

margin. If no RM command is contained in your document, the system will automatically assume a right margin of 65 characters. You may change the right margin at any point during the document by including an RM command.

Page Numbering: ≡PNnn.cc and ≡NN

The program allows automatic page numbering. If you insert the command PNnn.cc in your text, all pages after the one containing the command will be numbered, and the number of the present page will be declared to be page nn. If a value of 0 is given to nn, the number of the present page will not be altered. The number will be put at column cc of the page. For example, if somewhere on your first page you put the command: PN0.64 , the system will begin numbering at the top of the next page, putting the page number at the 64th column. If somewhere in your first page you put the command PN12.64, the system will begin numbering at the top of the next page, but will call that page number 13.

The page number is always put at the top of the page, followed by two blank lines. Thus, three lines of your current page length will be used up by the numbering. If you want to begin numbering the very first page of the document, the PN command must be at the very beginning of the text.

The NN command (no numbering) shuts page numbering off. This is the assumed state. To turn numbering on again the command PN0.cc will start numbering from the next page without altering the value of the numbering.

Other possibilities for numbering pages are explained in chapter 10.

TEXT FORMATTING ON THE PAGE

Centering: CE and NC

The CE command causes short lines to be centered on the page during printing. The NC command causes centering to cease.

Margin: ≡MAn

The MA command (margin) should be followed by a number and sets the width of the indentation from the left margin. For example, MA10 causes the first 10 positions after the left margin to be left blank. If no MA command is given, the system will assume MA0. Note that this command does not affect the right margin. So if the right margin is set at 80 and you have an MA10 command, the actual maximum length of any line is 70 characters. This paragraph has a MA20 command immediately before the "The" at the beginning of the paragraph, and there is a MA0 command on the blank line following:

Indent: ≡INn

The IN command (indent) is similar to the MA command but does not take effect until the line after the present one. This allows you to indent second and subsequent lines in a paragraph if you should want to.

This paragraph was printed using the IN20 command. To end indenting you should give a MA0 command at the beginning of the next paragraph. This paragraph was set up just like the previous one except that this one uses the IN20 command rather than the MA20 used in the previous one.

Right Justification: ≡JU and ≡NJ

The JU command causes the right margin of your printing to be justified. The NJ command turns off justification. How justification looks on paper depends on your printer. Certain nominated printers, such as the NEC, etc., allow the program to change the width of all spaces between words so that they are equal. On other printers the program must insert extra blank spaces between the words. Spaces are inserted from left to right on one line, then right to left on the next, etc., so that the text looks balanced (not too much white space on one side). The assumed setting is NJ, until you explicitly give a JU command.

New Page: ≡NP

The NP command (new page) tells the system to print no more on the present sheet of paper even if there is still room, but to go to the top of the next sheet.

Conditional Page: ≡CPn

The CP command causes the same effect as an NP command but only on the condition that there are fewer than n lines left on the present page. The command CP4 was used very freely throughout this manual. It was positioned on the blank line above each heading. This ensured that if there

were fewer than 4 lines left on a page then a new page would be begun before the heading was printed.

Stop: ≡ST

The ST command (stop) causes the computer to stop in the middle of printing. This would enable you to change a print thimble or daisy, if, for example, part of your document is to be printed in italics. This command works only with serial printers.

Tab to: ≡TAn

The TA command (tab) should be followed by a number. It tells the system to tab across to the nominated position on the printer. For example, TA55 causes the computer to print out spaces until it reaches the 55th position (relative to the left margin), then continue printing. This is used less often than the typing tabs (CTRL-T).

Doublespace printing: ≡DS

This command causes the system to print only on every second line. If the pagelength is currently PL54 then only 27 lines of text will actually be printed on the page.

Singlespace printing: ≡SS

This command causes the system to resume printing on every line. This is the assumed state if no DS command is included.

FOR INCREMENTAL SPACING PRINTERS

Printers such as the NEC, Diablo, etc. can vary their pitch and line spacing directly. The program supports this:

Pitch: ≡PIn

The PI command (pitch) should be followed by one of the numbers 10, 12 or 15. If you have a NEC Spinwriter Model 5530 or similar printer, this command enables you to set the print spacing to 10 characters per inch or 12 characters per inch or 15 characters per inch. Note that this command does not affect the settings of LM and RM although it appears to because of the different sizes of the characters. If no PI command occurs, ZARDAX will assume a pitch of 10 characters per inch.

Line spacing: ≡LSn

The LS command should be followed by the number 6 or the number 8. It sets the line spacing on certain printers to be either 6 lines per inch or 8 lines per inch. The assumed value is 6 lines per inch. Note that the system does not automatically alter the PL and FL values to take account of the new line spacing. On standard paper, you should probably include FL88 and PL72 commands immediately after a LS8 command. If no LS command occurs, ZARDAX will assume a line spacing of 6 lines per inch.

MYSTERIOUS FORMATTING PROBLEMS

There are a number of things that can cause mysteries to occur which you may not be able to understand. Thes· mysteries are sometimes caused by your forgetting to enter a necessary command, or by a misunderstanding about how ZARDAX will interpret your commands.

Usually you will easily be able to see what command needs to be entered to bring about the sort of formatting you

desire. For example on printing a draft copy you realise that you want to change the right margin position, so you insert an RM command and reprint the document.

But sometimes mysteries occur. One common mystery that occurs is the omission of the NC command. You have used the CE command to center a line or two of text. You forget to insert an NC command before starting the next paragraph and you find that at the last line of that paragraph, the system seems to have forgotten its MArgin setting. But all it is really doing is centering a short line. Insert an NC command before the paragraph and all is OK.

Another common mystery is not realising when commands take effect. Most commands do not take effect at the precise point where they occur in the text but at **the beginning of the present line being printed.** Thus for example an LM10 command takes effect at the beginning of the line where it occurs.

Another common mystery relates to the value of the number which many commands require to have following them. The system tries hard to obey you but sometimes ignores a command it considers to be totally crazy. For example suppose the MA setting is presently 20 and you set the right margin to 15. The RM command will be ignored. Now the reader might think no one would be so silly as to put in such a silly command. It's surprisingly easy. Once this writer wished to print a section of text in the leftmost 40 positions followed by a section of text indented 50 positions but 40 positions wide. So he preceded the first paragraph with the command ≡MA0≡RM40 and the second paragraph with the command sequence ≡MA50≡RM90. It didn't work properly. And the reason was that the MA50 was ignored because ZARDAX decided it was stupid to set a margin of 50 when the right margin was currently 40!

A similar mystery we will describe also concerns the value of the number put after a command. At the beginning of a letter I wish to set the right margin to 70 characters. The first line of my document will be "6 Maize Place,". So I write this:

≡RM706 Maize Place,

Poor old ZARDAX assumes I want a right margin of 706 characters. But the maximum value is 255. So it decides to work it out using modulo 256 arithmetic (that's mathematical jargon) and gets an answer of 194!! Not what I wanted!

In such places you can use the character | (CTRL-4) as a non-printing separator. So our command would be:
≡RM70|6 Maize Place,

77. The final mystery we'll talk about concerns the IN command. I wish to produce a set of numbered paragraphs where the number appears at the left margin but the rest of the paragraph is indented four places. So I begin the paragraph with "77.≡IN4 The" and I find that if JUstification is on, that ZARDAX considers itself free to expand the single space between the . and the T . This can be got round by using the special character CTRL-5 as a non-expandable space. It doesn't look like a space on the screen, and it can't be expanded when justification is on, but it prints like a space. CTRL-5 is also non-breakable which makes it useful in other circumstances. ZARDAX normally uses spaces to decide where it can put new lines. But there are some spaces which we would like not to be used for this purpose, for example the spaces in "6 Maize Place". It would be bad if the 6 were on one line and

the "Maize Place" on the next. So instead of spaces put CTRL-5s in these spots.

THERE'S MORE

We have now finished the tutorial section of this manual. But ZARDAX has more commands than we have yet described. Chapters 5 to 16 will cover these various facilities but in a less leisurely and explanatory way that has been used up till now.

You are advised that learning to use the other facilities to be described in these chapters will be a much less difficult task for you once you have had some experience with the **ordinary** use of the system. The ordinary use of the system is quite easy using only the facilities which have been described so far. In fact, we expect that many users of the system will never need to read further than this point.

But if you do propose to read further, we ask you not to do it yet. Wait till you have had some experience with what you have learned so far.

^ And v Moves

Sometimes you wish to move up or down a document more quickly than the U or D commands will allow. CTRL-^ will take the cursor up ten lines, CTRL-v will take it down ten lines.

TABBING

To tab across to the next tab-stop, press CTRL-T. (There are tab-stops already set when you turn the machine on). To clear a tab-stop, CTRL-T to it, then CTRL-C to clear it. (C for Clear). To set a new tab-stop, move cursor to the line position you want to set (watch the number at the bottom of the screen) and press CTRL-S (S for Set).

Note that you cannot tab beyond the 255th position in a paragraph.

FIND AND REPLACE; FIND

Sometimes you may wish to find all occurrences in the document of a particular word and replace them with another word. Begin by moving the cursor to the beginning of the section of text you want to search. Now press CTRL-F (F for find). Then type the word or group of words you wish to find. Press a carriage RETURN at the end. Then enter the word or group of words you want to replace it with, once again pressing a carriage return at the end.

When the first occurrence is found, the cursor will be placed at its beginning and you will be asked "Y/N/A?". If you press Y (yes) the replacement will be made and the next one will be found. If you press N (no) the replacement

will not be made in this case and the next occurrence will be searched for. If you press A (all), then replacement will be done automatically thoughout the document without asking your approval of each case. Remember, searches start from the cursor, and go to the end of the document.

If, instead of pressing Y,N or A, you merely press the space-bar, then the computer will drop out of "find and replace" mode, leaving the cursor at its present position. This last feature can be very useful if you merely want to find a particular point in the text without replacing it with anything.

Should you want to search for or replace the same terms later, just press return twice after the CTRL-F; the computer remembers your old search terms (and they are displayed at the bottom of the screen).

Phrases to be found or replaced have a maximum length of 23 characters.

SPECIAL CHARACTERS

Some extra characters can be obtained which do not appear on the keyboard. These characters are all obtained by holding down the CTRL key and pressing a number key at the same time.

1\ 3` 4| 6[7] 8{ 9}

CTRL-8 and CTRL-9 have a special function which will be explained in the section on personalizing documents in chapter 7.

Another special key, CTRL-ZERO, is used for printer commands.

The function of CTRL-5 was explained above in chapter 4.

Another special key, CTRL-SHIFT-*, is not itself a character, but causes the character following it to be made into a "control" character when printed. The effect of such control characters depends on the particular printer being used. For example, the control character N causes many printers to print special double-width characters. Such control-characters should be used with great care as they can cause a variety of unexpected effects depending on the printer. NOTE that such control characters can not be entered into your document by pressing the CTRL key: you must first enter the special key CTRL-SHIFT-* then the letter you want for your control code for your printer.

CUT AND PASTE

One of the important tasks required of a word processor is the adding together of "standard paragraphs" to make a complete document in some varying way. You might, for example, wish to compose a letter consisting of standard paragraphs 1,4,5,2 and 9, and then conclude with a custom-written paragraph. There are several ways this can be done with ZARDAX. The system will also allow you move words and sections of words in a variety of ways. Following is a description of these features, and the user is also directed to chapter 6 which describes a related function.

INSERTING FROM THE DISK

Standard paragraphs can be composed as complete documents with their own names, and separately saved on disk. When you wish to insert such a paragraph into the document you are working on, you should position the cursor where you want the paragraph to be inserted, then press command CTRL-I (I for Insert). You will then be shown a list of the documents on the diskette. Press the code of the paragraph you wish to insert and it will be inserted at the cursor's present position. The cursor will be left at the end of the insertion.

If you press CTRL-I by mistake, simply press ESC when the catalog appears. This will return you to the inner menu. Now press C to return to where you were in your text.

When the catalog appears after a CTRL-I you should press the space-bar to see if there are more documents on the disk than can be put on one screenful. If you decide that you don't want to insert any of those documents, but you do want to insert a document on another disk, insert that disk, press the space-bar and select your document. If you change your mind and decide not to insert anything, press ESC and then C.

MOVING PARAGRAPHS

It is very easy to move paragraphs around using ZARDAX. Position the cursor somewhere within the paragraph you wish to move and then press CTRL-M. ZARDAX will then ask you the question "MOVE U/D?". If you press U the paragraph will move up above the previous paragraph. Press U again and it will move up again. Keep on pressing U, or use the REPT key, until the paragraph is in the desired position.

Pressing D moves the paragraph down.

When you wish to stop moving the paragraph, press the space-bar.

If there are two or three paragraphs to be moved, you can combine them into one, by removing the carriage returns between them, move them as a block, then insert the returns again. If this is too much bother, you can use the feature described below.

MOVING SECTIONS

Moving large sections of text around in your text is easier to do using the CTRL-P (p for put) command as now described. Firstly you need to mark the top of the section to be moved. The mark is put in using CTRL-X (X marks the spot). So move the cursor to the top of the section to be moved, and press CTRL-X. Then move the cursor down to the bottom of the section and press CTRL-P. This command enables you to put (save) that section of your document onto the disk. You will be asked to give it a name. When you give the name, press RETURN and the section will be deleted from the document and put on the disk as a small (or large) document with the name you gave it. Now move the cursor to the position in your document where you wish that section to be and press CTRL-I. Read the section above on inserting documents and you'll easily be able to see what you have to do. Later on you can use the Main Menu "delete" command to erase that temporary document from the disk.

Note that it is not a good idea to have more than one mark (CTRL-X) in your document. If there is, ZARDAX will assume that the closest one is the one you mean. If there is no

mark in your document, the CTRL-P command will put everything above the cursor onto the disk.

COPYING SECTIONS

Sometimes you don't exactly want to move a section to another place in your document, you want the section to appear in both places. We say that you want to **copy** that section to another place.

Firstly mark (with CTRL-X) the top of the section, then move the cursor to the bottom of the section. CTRL-P to put it to disk, giving it a name as before. As soon as that is done, press CTRL-I to insert it back in the spot it came from. Then move the cursor to the new position and CTRL-I to insert it again. In fact, you could use this procedure to easily put many copies of a section in the same document at different locations.

MAKING DELETIONS

Simple deletions may be made using the two arrows on the keyboard. They always delete characters (one at a time) and can be used very effectively in conjunction with the REPT key (hold both keys together).

Remember that the left-arrow deletes the character immediately before the cursor, whereas the right-arrow deletes the character the cursor is sitting on.

Larger amounts of text may be deleted using the command CTRL-W (W for Wipeout). When you press this key you will be asked:

WIPEOUT WHAT? P/A/B/S?

If you press P, then the rest of the present paragraph will be deleted. If you press A, everything Above the cursor will be deleted. If you press B, everything Below the cursor will be deleted. If you press S, the section up to a mark (CTRL-X) will be deleted. Pressing S assumes you have previously marked the top of the section with a CTRL-X and that the cursor is sitting at the bottom of the section. Once again it is not a good idea to have more than one mark (CTRL-X) in your document at any one time. If your document does not have a mark above the cursor, then everything above the cursor will be wiped out by answering the question with the S reply.

The WIPEOUT WHAT question can have one of four answers: A for Above, B for Below, P for Paragraph and S for Section.

If you press the space-bar, nothing will be deleted. So if you change your mind after pressing CTRL-Wipeout, simply press the space-bar.

CTRL-W is a dangerous command. Be very careful when using it. Save your file before doing major deletions, just in case of error.

UNDERLINING

Unfortunately, the kind of printer you have affects how underlining works (if at all). Letter-quality impact printers work like this:

If the printer itself can backspace its printhead, you can underline any character by positioning the cursor on the character you wish to underline, then pressing CTRL-Z. If you want to underline a word or sentence, hold CTRL and press Z repeatedly, or use the REPT key.

To remove underlining, position the cursor and press CTRL-Y.

Many dot matrix printers will not accept the backspace (ASCII $08) and therefore may do strange things if asked to underline. If your printer itself has no underlining facility, you should refrain from underlining anything in your documents. If your printer permits setting an "underline mode" with control characters, Glossary may be used to do this. The Centronics 737 is one printer that works this way; one of the Samples at the end of the manual contains a Glossary that will do underlining and type size changes on the 737.

Alternatively, you may be able to get a competent programmer to use the information contained in chapters 20, 21, 22 and 25 to make underlining work with your printer.

USING A GLOSSARY

There are many phrases which a document writer will use repeatedly. The program allows you to store up to 26 such phrases in the computer and insert any of them simply. Each of these phrases is given a code letter (A-Z). When you wish to insert one of the phrases into your document you should press CTRL-G followed by the code-letter of the phrase you want. That phrase will then be inserted in your document at the current cursor position.

A set of such phrases is called a Glossary. You may have many different glossaries stored on diskettes, but only one may be in use in the computer at a time. Each glossary may have a maximum of 26 phrases. Phrases may be quite long and may consist of several lines of text. Glossary phrases may also contain print formatting commands

You can create a glossary using the ordinary facilities of ZARDAX. It should be saved on the diskette as though it were an ordinary document. When you want to load your glossary into the computer, first go to the main menu. Here you should use the Glossary command, not the retrieve command. This will load the particular glossary into the computer. If you load a new glossary, it will delete the glossary in the machine if there was already one there, and it will delete any document currently in memory. Note that the document memory space of the computer is decreased by the size of your glossary. If your glossary was one thousand characters in length, then the document memory would now be 12500 characters instead of the usual 135000 (for a 40-column system).

MAKING A GLOSSARY

When you are creating your glossary, you should indicate the beginning of a glossary item by two of the special characters CTRL-ZERO followed by the code-letter for the item (A-Z). The end of the item is marked by three of the special characters CTRL-ZERO.

Glossary example:

≡≡AYours sincerely,≡≡

≡≡JPeter J. Williams,
President
≡≡

≡≡Q14 Joplin Street,
Sun City, CA 90148

≡≡

≡≡H≡CS≡RM80≡PL54≡JU≡≡

Note: The above glossary consists of four items, codes A, J, Q, and H. This glossary should be entered into the computer as though it were an ordinary document and saved on disk with a suitable name, say GLOSS A. Then return to main menu and load it using the Glossary command. In subsequent document editing, if you should press the command CTRL-G followed by the code J, then the relevant item will be inserted into your text at the current cursor position.

You should create your own glossaries to suit the sort of

phrases which you are likely to use repetitively. Item H, above, shows how a "heading" can be put in a glossary, then entered at the beginning of your text to set text formatting controls.

The ZARDAX program disk comes with a sample glossary file (code B1). File B1 is automatically loaded as the glossary whenever you run the program. You can replace the sample glossary with whichever set of glossary terms you will use most often. Remove the write protect tab from the program disk, save your glossary using the name GLOSSARY (to replace the sample), then put the tab on the disk again.

PERSONALIZING LETTERS

You may find that you frequently want to send to different people a letter which is substantially the same, but with specific differences. Clearly the name and address of the recipient will vary with each new letter and other information included in the body of the letter may also need to be altered.

When you create a document into which you will want to put personalized information, you should use the characters obtained by pressing CTRL-8 and CTRL-9. Between these "curly-brackets" you should put unique labels which are to be replaced at printing time with real information.
On the next page is an example of such a document.

11th December, 1981

{Name},
{Organiz}
{Address},
{City}, {State-Zip}

Dear {Greeting},

I write this letter to you because I know that you are interested in new methods of increasing your business efficiency. My company may be in a position to help you.

My company has recently produced a new method of substantially increasing rates of throughput on assembly lines. I would be pleased to give you a personal explanation of our methods with a demonstration.

Yours sincerely,

John J. Williams
President

If you print the above document with the Draft command, it will print exactly as shown including the curly-brackets with the enclosed labels. However, if you print it with the Print command, the system will discover that there are labels and will ask you whether you wish to type the necessary information at the keyboard or whether it is to be obtained from a diskfile. If you answer that a diskfile is to be used it will ask you which diskfile, and then it

will print as many copies as asked for with all information entered correctly. The diskfile may be one which was produced by ZARDAX, or it may be a sequential text file produced by another program. It should be in the following form for the example given:

```
{Name}
{Organiz}
{Address}
{City}                          label set
{State-Zip}
{Greeting}
Mr. R.J. Smith
Sand Processes Inc.
P.O.B. 237
Sunnyvale                       first info set
CA 96034
Bob
Mr. Quentin B. Johnson
Wilson & Associates
12573 South Blvd
Westham                         second info set
NJ 08007
Mr. Johnson
Ms. D.J. Jones
C&Q Electronics
57 Maize Avenue
Staten Island                   third info set
NY 10305
Ms. Jones
Mr J.T. Rees
Seattle Timber Mills
1010 Industry Drive
Seattle                         fourth info set
WA 98188
Jim
```


In the example given, four personalized letters could be produced. You would specify four copies to the Print command.

Notice that it would be quite easy to miscount the number of lines in a group in the diskfile. The insertion of an extra line or the omission of a line could cause a variety of foolish effects in all subsequent letters produced .... Dear WA 98188 ! You can define a field as {blank}, then put a blank line between entries, as one way to separate items visually.

Notes:

(a) the number of lines in each info-set must be exactly the same as the number of lines in the label set.

(b) the total size of the label set must not exceed 250 characters.

(c) the total size of any one info-set must not exceed 1000 characters.

(d) any document which uses this diskfile does not have to contain all the labels. Therefore it is possible to write a document which accesses only some of the labels. The following document would print address labels from the above file:

```
≡FL6≡PL4{Name}
{Organiz}
{Address}
{City}  {State-Zip}
```

(e) a document may repeat the same label as many times as desired and the relevant info will be inserted correctly each time.

ADVANCED USE OF LABELS

We now describe a method of using the above facility that allows of powerful use of ZARDAX to produce a set of related documents.

Suppose that you are arranging for a set of contracts, letters and legal documents to be produced which are relevant to a transaction, for example the sale of some land.

You could produce (using the Word Processor or some other program) a disk file which included all the relevant variable information about such transactions. This diskfile might include ten or more items of information with a corresponding number of labels. Consider the example on the next page.


```
{buyer}
{buyer's addrs1}
{buyer's addrs2}
{seller}
{seller's addrs1}
{seller's addrs2}
{property description}
{legal fees}
{contract date}
John Peter Jones
14 Main Square
Largetown, NY 09021
Peter John Smith
127A 14th Street
Smalltown, NJ 10001
Lot 12743, NEWESTATE, Smalltown
$1,943.04
12th December, 1980
```

You could then have a large number of standard documents which each use part or all of the information in the above diskfile. For example, one of the standard documents might read as follows:

PUBLIC NOTICE

This is to notify all interested members of the public that {buyer's name} has entered into a contract to purchase a property described as {property description}. The date of contract is {contract date}.

{buyer's name}

You could have a whole set of standard documents which you use for such contracts. Then whenever you have to arrange

a set of standard documents, all you need to produce is a new version of the diskfile. Then print all the standard documents using the new diskfile.

Note that the system has some memory limits. The total memory used up by labels must be no more than 250 characters. The system uses one space for each character in your labels and one extra space for each label. The total information buffer is 1000 characters. If your diskfile exceeds these limits, the computer will stop and explain the nature of the problem. If your label space is used up, you can solve the problem by using shorter labels.

MAILING LABELS

It is easy to set up a format to print mailing labels from a "curly bracket file" such as those above. For example, the file below will print labels on one-up five-line tracked label stock.

```
≡FL6≡PL4{Name}
{Organiz}
{Address}
{City}  {State-Zip}
```

You would save this file with a name such as LABEL FMT, then print this "document" as many times as there are names in the curly bracket file.

If you have a wide printer, i.e., 132 columns or more, you can use the following "list format" document to print labels with all information for one person on the same line. This is useful for proofing mailing lists, for an archival copy.


```
≡FL0≡RM132{Name}≡TA33{Organiz}≡TA65{Address}≡TA97{City}≡TA12
5{State-Zip}
```

This format must be all on one line, as shown. It assumes that none of the first four fields are longer than 32 characters. Make sure the cursor is positioned at the end of this line after retrieving this file, and that there are no return characters, etc. after the cursor. The listing will work only if all the material for a name will fit on one line; if a line runs over, the printed list may look strange in parts.

The list will be printed without inter-page gaps because the command FL0 suppresses inter-page gaps altogether.

ANCILLARY PROGRAMS

If this section seems to you to be gobbledy-gook, don't get upset. Show the whole chapter to a computer programmer and he may be able to make some suggestions about what great programs he could write for you (perhaps for a fee) that would help you greatly in your use of your computer.

The features outlined in this chapter could be very effectively used by a programmer to interface a general purpose database program to ZARDAX.

Database programs written under Apple DOS commonly use random access text files. If the programmer understands the format of those files he can write ancillary programs to select information from those files and write a file for use with the label facilities of ZARDAX. Database programs do commonly make available the necessary information about their files' structure.

Many users of ZARDAX will have attached to their computer more than one disk drive. The system allows you to retrieve documents from any of the drives and to save documents to any of them.

THE CURRENT DRIVE

The most important concept to be considered here is the idea of the **current drive.** Once a drive has been defined to be the current drive, it will continue to be so regarded until you redefine it.

The definition of current drive requires that you give the system three pieces of information. They are called SLOT, DRIVE and VOLUME.

The slot is the number of the physical slot into which the disk interface is plugged in your Apple. Most usually the interface will be in Slot 6 unless you have more than 2 disk drives attached to your system. In this case the third and fourth drive may well be attached to an interface in slot 5. In any case you should consult your DOS manual and use the information there to enable you to open your computer's case and see which slots your disk interfaces are plugged into.

Each interface in a slot may have either one or two disk drives attached to it. Therefore when defining the current drive you must also specify the drive - either 1 or 2. This value will be 1 if the relevant disk drive is attached to the top of the interface circuit, or 2 if the drive is attached to the bottom of the interface circuit.

The volume value will always be zero when you are referring to "floppy disk drives", as most users will be.

Now for our example, we will suppose that you have two disk drives, attached to an interface in slot 6. (This is the most common situation when there is more than one disk drive.) You will have to find out which drive is called drive 1 and which is called drive 2. Actually drive 1 is easy to find. It's the one whose light comes on first when the power is switched on to your computer.

Now when ZARDAX is started it assumes that the current drive is Slot 6 Drive 1 Volume 0. If you want to change this to refer to the other drive you must press Z (in either menu) and then enter 620 followed by RETURN. The 6 is the slot, the 2 the drive and the 0 is the volume.

To change back to drive 1, simply press Z again (in either menu) and enter 610 followed by RETURN.

If you inadvertently enter a volume number other than zero, you will find that the system begins to refuse all cooperation and keeps on dumping you into the inner menu. Use the Z command to redefine the current drive (usually with 610).

If you inadvertently enter a slot or drive number referring to a non-existent drive, you will find that the whole system may appear to die altogether. To bring about a resurrection, press CTRL-RESET to get the inner menu, then use the Z command to enable you to enter 610 again.

THE TRANSFER DRIVE

The system also allows you to define which drive will be used as the "destination" for the transfer command. Once the transfer drive is defined, it maintains that definition until specifically changed.

Definition of the transfer must be done in the main menu. Press the Y key to allow entry of the definition. As above the definition must include three values, for slot, drive and volume. As above there must be no spaces between the values and the definition must be concluded with the RETURN key.

MOST USUAL SETTINGS

For a user with one disk drive (usually in slot 6, drive 1) current and transfer drives should both be defined as 610.

For a user with two disk drives (usually in slot 6, drive 1 and slot 6, drive 2), it is most convenient to define the current drive as 610 and the transfer drive as 620.

Most use of the system will probably be for documents which are small enough (only a few pages long) for you never to see the message "DOCUMENT TOO LARGE".

But at some time in your use of ZARDAX you are going to meet this message. The way the system operates is that the document you are entering or editing is entirely stored in the memory of the computer as you work on it. Now the computer has a finite limit to its memory space. The size of this limit depends on what accessories you have plugged into your computer. If you have a standard Apple II Plus with 48K of memory and you are using the standard 40-column display, then your document space is just over 13,500 characters long, less the size of the glossary you have presently in memory.

If you have installed an 80-column video accessory your document space is expanded by a further 8000 characters. Alternatively if you have the Apple Language Card (or equivalent), your document memory is expanded by a further 10,000 characters. If you have both of these accessories, your document memory space will be expanded by a total of 18,000 characters to 31,500 characters (less the size of yodr glossary, as before).

But no matter how big your document memory space is, sooner or later you will probably want to write a document that is longer than the memory will allow. One day you will be typing away when out of the blue you will find that you are in the inner menu and the message will appear "DOCUMENT TOO LARGE". All is not lost. Read on.

YOU TYPED A DOCUMENT TOO LARGE

First thing to note is that your document has not been erased. In fact, you can still look at it, if you press the C key from the inner menu. Furthermore you can delete characters or sections from it. But if you don't delete anything you cannot type another character into it. Each time you try, you'll get thrown out. If you keep trying more than about 20 times ZARDAX might even die of apoplexy!

What you really need to do now is to split your document into two parts. A long first part (most of it) and a short part at the end. Decide on a suitable breaking point about 1000 characters from the end. Decide on two new names for the two parts of your document. Now position the cursor at the breakpoint you have decided upon. Press CTRL-P and give the name you have decided upon for the top part of your document. ZARDAX will then save the top of your document on the disk with that name. (This discussion assumes you have no CTRL-X marks in your document - see chapter 5). Now press ESC to go to the inner menu and press R to change the name of the bottom smaller part of your document. Give it the second name you decided upon, then save it. Now you have two separate documents. Later in this chapter we will find out how to link together (for printing) such partial documents, to print documents up to 50 or 60 pages long.

Meantime you can press C and continue typing in words at the bottom of the second document.

SAVING TOO LARGE DOCUMENTS

Now in the situation outlined above, you can actually save the document without splitting it as described. If you do

so, you will lose no more than a few characters at the end of the document. However, each time you later attempt to Retrieve that document, you will get the "TOO LARGE" message and find yourself in the inner menu. Fear not, the document has been retrieved, and you can see it just by pressing C. As described above, you can't add any more to the document, but you can print it and save it and delete things from it.

RETRIEVING A TOO LARGE DOCUMENT

More difficult to cope with is when you retrieve a document, get the TOO LARGE message and find that some portion of the document appears to have been chopped off the bottom. There are two possible causes for this phenomenon.

The first cause is that when you created this document you had in memory a fairly short glossary, but now you have in memory a longer glossary. Remember that the length of your glossary is subtracted from the available memory space. If you now load (using the G command in the main menu) the shorter glossary you used before, you will once again be able to Retrieve the whole of your document.

The second possible cause of this phenomenon is that the document was created on another computer which has more memory space than yours. For example, it was created on a computer which has an 80-column video accessory and thus an extra 8000 characters of memory space.

This cause too can be overcome. What you will have to do is to split the document into two (or more) smaller documents. If you follow this procedure you will succeed: Firstly decide on the two names you are going to give the

two smaller documents you are going to make from the one which is too large. Now Retrieve the too large document. When you land in the inner menu with the "TOO LARGE" message, Rename the part which was retrieved using the first of the two names you decided upon. Then save that part - that's the first part achieved. Now go back to the Main Menu, and once again Retrieve the document that is too large. This time when you land in the inner menu with the "TOO LARGE" message press OO (that's an oh followed by a zero!). What will happen is that the memory space will be cleared and then ZARDAX will continue Retrieving where it left off. When it finishes, press R (Rename) and enter the second name you decided upon. Then press S to save the second part.

If you got the "TOO LARGE" message again, it means that you need to split the original document into **three** parts. So go back to the Main Menu and Retrieve it yet again. Then enter the OO command **twice**, press R and enter the third name you chose, then press S to save that part.

As you might guess an extremely long document could thus be split into many parts. But most users will never have to split such a document into more than two parts.

MULTIPRINTING

We promised you earlier in this chapter that we would give you a method of linking together two or more documents to print a single long document. This process is called Multiprinting and is invoked from the main menu by pressing M.

To do this you must first construct a short document which will consist of the <u>codes</u> of the documents you wish to link

together. We call this short document the link-file.

Suppose you wished to print together the documents whose codes (on the main menu listing) were A4, E1, G6, and A3. You would then create a very short document, a link-file, call it "CHAIN" (say). This document would contain nothing at all except these codes, as follows:

A4E1G6A3

Please note that there are no spaces or RETURNS in this link-file, and if there were they would prevent the system from discovering any valid codes after them.

You then save this brief document to the disk. When you begin multiprint with the M command in the main menu, refer to this brief document, rather than to the ones you actually want to print. The computer will load this link-file, and use its information to retrieve actual documents, in order, as they are needed. While this may sound like a rather indirect way to do things, there is substantial power in this approach. Consider this: if you have several stock paragraphs on the disk, you can create different "code files" to print differing combinations and orders of the paragraphs, without having to assemble the final document using inserts from the disk.

When you give the Multiprint command, the system will ask you which page to start the printing from. If you tell it to start printing from the first page, all will be OK. But if, for example, you told it to start printing from the thirtieth page, there could be some considerable delay. You might even think the system had died. Or you might think that perhaps ZARDAX is as slow as the other word processors available for the Apple. The reason for this delay is that the system has to "think through" those first

29 pages which it is not printing to ensure it does find accurately the right words to print at the top of the thirtieth page where you want your copy to start from. The delay amounts to about one second for each page, plus about another second for each page used in "retrieving" time.

If you interrupt either a multiprint (or videomultiprint) with an ESC, the document currently in memory will stay there. However, you cannot later resume the multiprint or videomultiprint -- except by starting from the beginning at the main menu, and specifying the page number at which printing is to start.

The R (restart) interrupt does not work during multiprinting.

Note that curly bracket fields (for personalized documents, see chapter 7) cannot be used in multiprint -- the computer will ignore them, printing the bracket fields as if in a draft command.

Whatever format commands are in effect at the end of each document in the chain will stay in effect with the next one, unless explicitly changed at the beginning of the next document. The only exception to this is the definitions of headers and footers (see chapter 10) which are lost when the next document in the chain is retrieved.

VIDEOMULTIPRINTING

Whew! What a mouthful!

This function is quite like the Multiprint command, and operates from the Main Menu with the V command. As with Multiprint you are required to have constructed a

link-file, and you can start the printing process from any page. As before you should note that there may be some delay in starting to print, if the system is required to "think through" the first, say, 20 or 30 pages before starting the display.

You will have noticed in this manual that there are headers and footers throughout and that the headers change chapter by chapter. The footers do not change in each chapter except that the page numbering (which is part of the footer) does change. You will also have noticed that the position of parts of the headers and footers seems to be dependent on whether the page number is an even number or an odd number. On odd numbered pages, certain information is pushed to the right of the page, and on even numbered pages like this one the same information appears on the left of the page.

The different kinds of headers and footers are implemented by the writer using commands which are like the printer format commands we learned about in chapter 4. Each command is preceded by the special character CTRL-ZERO - ≡.

PAGE NUMBERING - PN and NN

The simplest kind of header to use and understand concerns simple page numbering where you are satisfied that the page numbers should always appear at the top of the page, and where you do not want the position of the numbering to alter on successive pages. It should be noted that this kind of header was not used in this manual.

The command ≡PNnn.cc has two functions. It is a declaration of the page number of the present page, and it is a command to begin numbering from the top of the next page. The command ≡NN tells the system to stop putting this kind of header on each succeeding page.

If you want to use the PN command as a simple declaration of the present page number without actually "switching on" this kind of header, you should follow the PN command (in

the form you desire) with a NN command. This kind of declaration is useful if you want page numbers printed in the footer or the other kind of header and you want to change the numbering to something different from what ZARDAX would assume. The system naturally assumes that the first page of a document is page number 1. If you wanted it to be considered as page number 347, then you would have to declare it so using the PN command.

The form of the PN command is that it must be followed by two numbers separated by a period. For example, the command PN12.32 is a declaration that the present page is to be considered as page number 12. It is also a command that page numbering is to be begun on the next page and that the number is to be placed on (each page) 32 positions after the left margin. If you simply wanted to declare the page number without commencing numbering in this form, you could make the command ≡PN12.32≡NN

If you had turned off page-numbering of this type (using NN) and wanted to turn it on again without making any declaration about what the page number is (you might not know!), then declare the page number to be zero. For example, ≡PN0.32 commences this form of numbering from the top of the next page, at position 32, but lets ZARDAX decide what the number is. The decision may be based on a declaration you had made pages before. If you had never made any declaration, ZARDAX would consider the first page to have been page number 1.

Let us emphasize again that this is not the only way you can number pages. You can also do it the way we did it in this manual, as explained below, and use the PN command (with an immediate NN following it) merely to declare page numbers if you wish to.

If you do use this form of page numbering, you should realise that the system will print the page number at the very top of the page, and will then print two blank lines. These three lines will be subtracted from the pagelength of 54 lines or whatever other pagelength you may have decreed using the PL command (see chapter 4). Thus the inter-page gap (the difference between PL and FL) will not be altered by using this form of page numbering.

HEADERS HD HO NH

On occasion you may wish to produce a constant message at the top of each page. The "header" commands allow this. First, you must define the text to be contained in the header, using the HD (header define) command. All text following the HD will be in the header, until you enter a CTRL-ZERO character. For example:

```
≡HD                    Chapter One: Beginnings


≡
```

It is important that there be two or three RETURNs immediately before the ≡ which marks the end of the header. This will cause a gap between the bottom of the header and the beginning of the text on the page.

The header will not be printed where you define it. In fact, it will not be printed at all until the top of the next page after you turn it on with a HO (header on) command. It will continue to be printed until the NH command is encountered. NH (no header) will turn it off again. Thus, you can make the header appear only on certain pages. Header definitions cannot contain any other

CTRL-ZEROs. Thus, if you want a section heading to be in the center, you will need to insert spaces in front of the words (as in the example above).

A header cannot be printed on the top of the first page of a document, because the system will already have passed the top of the page before it can discover the ≡HO command.

If you are using multiprint (see chapter 9), you should realise that the header definition will be lost when the next linked document is retrieved. If you want the same header to continue you must re-define it and turn in on (≡HO) at the beginning of each linked document.

FOOTERS FD FO NF

On occasion you may wish to produce a constant message at the foot of each page. The "footer" commands allow this. First, you must define the text to be contained in the footer, using the FD (footer define) command. All text following the FD will be in the footer, until you enter a CTRL-ZERO character. For example:

```
≡FD

Signed in the presence of _____________
Signed by                 _____________
This 14th day of January, 1981.
≡
```

Footers can also be used for section titles, such as:

```
≡FD

                One: Beginnings
≡
```


It is important that there be a RETURN immediately before the ≡ which marks the end of the footer. It is also important that the footer begin with one or two RETURNs, to cause a gap between the bottom of the text and the beginning of the footer.

The footer will not be printed where you define it. In fact, it will not be printed at all until the page at which you turn it on with a FO (footer on) command. It will continue to be printed until the NF command is encountered. NF (no footer) will turn it off again. Thus, you can have the footer appear only on certain pages. Footer definitions cannot contain any other CTRL-ZEROs. Thus, if you want a section title to be in the center, you will need to insert spaces in front of the words (as in the second example above).

If you are using multiprint (see chapter 9), you should realise that the footer definition will be lost when the next linked document is retrieved. If you want the same footer to continue you must re-define it and turn in on (≡FO) at the beginning of each linked document.

ILLEGAL CHARACTERS IN HEADERS AND FOOTERS

The character CTRL-ZERO ≡ cannot appear in a header or footer as it is the teminator of the definition. Also the characters # and % cannot be printed in a header or footer because they cause special effects as outlined below.

PUTTING PAGE NUMBERS IN HEADERS AND FOOTERS

Page numbers can be placed in a header or footer by the inclusion of the sequence %# anywhere within the header. The positioning of the number is entirely dependent on the position of the %#. If you want it in the center of the page you must precede the %# with sufficient spaces to move the number away from the left margin.

You may include a number of characters between the % and the #. For example the sequence %10-# will cause the page number to be preceded by the letters 10-.

You may cause the number (together with the string of letters between the % and the # to move depending on whether the page number is even or odd. This happens if the # is immediately followed by a number. On even numbered pages the number will be printed on the left where it is declared, but on odd numbered pages it will be printed at the position set by the number following the #. The footers in this chapter were printed with the footer declaration that follows. (The footer was turned on by a ≡FO command near the top of page 2.)

```
≡FD

%10-#57          Copyright • 1981 Computer Solutions
≡
```

Moving phrases can be used like this without the use of page numbers. This is best illustrated by noticing the moving headers in this chapter. These headers were made not with the characters %# but with the characters %%. Whatever occurs between the two %s constitutes the moving phrase, and its position on odd-numbered pages is determined by the number following the second %. In the

case of this chapter the header was defined by the declaration that follows. (It was switched on with a ≡HO command on page 1 of the chapter.)

```
≡HD%10: Headers And Footers%38

≡
```

Notice that the definition includes two blank lines to cause a gap between the header and the top of the text on each page. Likewise notice in the footer definition illustrated earlier, that it begins with two blank lines to separate it from the bottom of the text on each page.

NORMAL START-UP

Normal start-up for ZARDAX as here described assumes that you have an Apple II Plus with at least 48K of memory and at least one disk drive attached to the computer.

If the power is presently switched off, then insert the ZARDAX disk in the drive and turn on the power. When the message appears, press RETURN to continue the start-up.

if the power is already on and you have already been using some other program then there are three possibilities.

1. You have been using a program written in the PASCAL language. In this case, insert the ZARDAX disk in the drive and simply press CTRL-RESET.

2. You have been using a program in the BASIC language or in machine language under DOS. The program allows you to get into command-mode. In this case, get into command-mode, insert the ZARDAX disk, and type the command PR#6, then press RETURN.

3. You have been using a program in the BASIC language or in machine language under DOS. The program does not allow you to get into command-mode. In this case, switch off the power, insert the ZARDAX disk, and switch the power back on.

NON-STANDARD START-UP

While ZARDAX is specified for an Apple II Plus, it may be possible to use it with an Integer Apple II. An absolute requirement is that the system includes an Autostart ROM. Another absolute requirement is that the system includes an

Applesoft ROM board with the red switch in the down position (so that the Autostart ROM on the mother board will be selected on RESET). In this case, you can use the same start-up procedures as outlined above.

Alternatively, you may use ZARDAX with an Integer Apple II if you have a Language Card. In this case, you must start the system with the DOS 3.3 MASTER in the drive, then insert the ZARDAX disk and type RUN HELLO and press RETURN.

Finally, ZARDAX may be started correctly (in these machines) by the valid DOS command RUN HELLO, S<slot>, D<drive>, V0

The main menu has two general functions. It provides you with a set of commands (called options) and it shows you a catalog of what documents are stored on the current disk.

THE CATALOG FUNCTION

The catalog function is almost entirely automatic. Each time you enter the main menu, the system will attempt to display a catalog. If it fails it will assume a DISK MALFUNCTION. If there are more documents in the catalog than can be displayed on the screen, you may see subsequent displays merely by pressing the space-bar. If you wish to see the catalog of another diskette, you may do so by inserting that diskette and pressing the space-bar. These uses of the space-bar also apply at two other places in the system when a catalog is displayed.

The user should note that only documents (or other text-files) are displayed on this catalog. Programs are not displayed. Therefore the user is warned not to erase a diskette merely because he no longer wants any of its documents. It may also include programs which he has forgotten. If you store your documents on disks which include no programs (as most users will), this warning may be ignored.

THE OPTIONS OF THE MAIN MENU

When the main menu is on the screen, a variety of commands is available to you. These commands are printed down the left side of the screen.

The general format of these options is that it is necessary only to press the first letter of the command's name. If

the system requires more information it will ask for it. Many commands can be aborted merely by pressing the space-bar instead of answering the question.

There follows a brief description of each of the main menu commands.

CREATE

The create command deletes any document presently in the computer's memory, it asks you to enter the name of the document you wish to create. Then it puts you into edit-mode so that you may start typing the document. Note that this command does not automatically put the new document on the disk. You must explicitly do that using the Save command in the inner menu.

PRINT

The print command retrieves a document already on the disk and prints any number of copies, starting from any page. If the document includes {labels} then values must be inserted at the keyboard or from another disk-file (see chapter 7). In referring to the document to be printed, you should not enter its name, but rather its **code** as displayed on the screen.

MULTIPRINT

The multiprint command retrieves a link-file which it uses to print a "chain" of documents which have been separately created and saved on the disk. Details of the form of the link-file and of the action of this command can be found in chapter 9. In referring to the link-file you should not enter its name but rather its **code** as displayed on the screen.

VIDEOMULTIPRINT

The videomultiprint command retrieves a link-file which it uses to videoprint a "chain" of documents which have been separately created and saved on the disk. Details of the form of the link-file and of the action of this command can be found in chapter 9. In referring to the link-file you should not enter its name, but rather its **code** as displayed on the screen.

RETRIEVE

The retrieve command deletes whatever document is presently in the computer memory and retrieves a document which had previously been created and saved onto the disk. The system then puts you into edit-mode with the cursor positioned at the end of the document. In referring to the document to be retrieved, you should not enter its name, but rather its **code** as dispayed on the screen.

TRANSFER

The transfer command encourages you to make back-up copies of your documents by providing a quick way to retrieve a file, then save it onto another disk. The program prompts for the code of the file to copy, then instructs you when to insert the diskette onto which the copy will be made. When referring to the document to be transferred, you should enter not its name, but rather its **code** as displayed on the screen.

DELETE

The delete command allows you to destroy a document stored

on a disk. You might want to do this because you no longer need that document or because you have other copies of it on other disks and you simply wish to delete it from this disk. This command entirely erases the nominated document from the diskette and allows other documents to be stored in the space now made available. Remember that in referring to documents on the diskette, you should describe them by using the two-letter code printed on the left side of the document name. When the delete command is pressed, the system will beep at you to remind you that it is a dangerous command. If you want to abort the command, press the space-bar immediately.

LOCK

Sometimes, you will wish to protect a document from accidental change or erasure. One way to do this is to "write-protect" the diskette so that nothing may be changed on it. However, this may not help if you wish to protect just one document and leave yourself free to alter other things on that same diskette. To solve this problem, the system has a command called Lock. When you lock a document, an asterisk appears beside its name on the screen. Once it has been locked, the system will refuse to delete it from the diskette (unless you first Unlock it). Also the system will prevent you from saving any document with that same name on that disk.

UNLOCK

The unlock command removes the lock so that you can delete the document, or save a document with that name on that disk (thereby deleting the old document with that name).

GLOSSARY

The glossary command destroys any document currently in the computer's memory. It then retrieves (in a special way) a special document which includes glossary item definitions (see chapter 6). The glossary cannot be seen once retrieved but it can be used by the CTRL-G command in edit-mode. Note also that glossaries can be Retrieved (using the R command) if you want to look at them or change them.

NEWDISK

The newdisk command formats a disk so that ZARDAX can store documents upon it. If the diskette had already been used before then this command will **entirely erase** everything stored upon it.

INDEX

The index command will print (on the printer, which must be switched on) the complete catalog of documents stored on the current disk.

EXIT

The exit command enables you to leave ZARDAX and go to some other program that you may wish to use. Once you give this command, and verify it as the system demands, you can insert another program disk, press CTRL-RESET and ZARDAX is now finished.

CURRENT DRIVE DECLARATION

This command is one of three non-visible options in the main menu. Details of its use are found in chapter 8. The

command is brought about by pressing "Z", and then entering a number, usually 610, followed by RETURN.

TRANSFER DRIVE DECLARATION

This command is one of three non-visible options in the main menu. Details of its use are found in chapter 8. The command is brought about by pressing "Y", and then entering a number, usually 620, followed by RETURN.

ESC

This command is the third and final non-visible option found in the main menu. Its effect is simply to take you to the inner menu. It may be necessary to press it twice to get it to work.

CTRL-RESET

This is not really a command but rather a function of the computer itself. You may press CTRL-RESET to go to the inner menu. But it is better practice to use the ESC key for this purpose.

The inner menu is used to save, print, videoprint, and rename the document currently in memory.

INNER MENU COMMANDS

Each of the inner menu commands is invoked by pressing the first letter of its name. There are also a few non-visible options which are invoked by pressing keys as described in what follows.

CHANGE

The change command takes you to edit-mode so that you can enter text into your document or edit it. The cursor will be positioned where it was when you ESCaped from edit-mode; or, if you have saved, printed or videoprinted the document, the cursor will be positioned at the end of the document.

DRAFT

The draft command prints a single copy of the current text on the printer. Any "curly bracket" personalized-document fields are printed as contained in the text, not as they would be replaced in a Print command. Page numbering and other formatting will be performed. Draft printing may be stopped by pressing an R (restart). The program will then prompt for a page number at which to restart.

MAIN MENU

The main menu command takes you to the main menu without affecting the text currently in the computer (to come back, use ESC).

PRINT

The print command prints one or more copies (as you specify) on the printer. Printing may also begin at any page number you specify. If printing is interrupted by an ESC or CTRL-RESET, you may resume at the desired page with another print command and the page number at which you want to begin. An R (restart) may be used to interrupt printing, e.g., to change printer ribbons; the program prompts for a page number at which to restart the print. If the printing is paused (by pressing the P key during printing), it may be restarted by pressing the space-bar.

RENAME

The rename command enables you to change the name of the document currently in memory. Rename prompts you for new document name and notes. Once renamed, the document may be saved as a completely different file on the disk.

SAVE

The save command records a copy of the document currently in memory to the disk, storing it under the current "document name" file name. It will replace completely the previous contents (if any) of the disk file, even if the document being saved is shorter than the original. Save frequently during text writing, and before printing your document, for security in case either (a) something goes wrong with the computer, or (b) your printer causes problems.

VIDEOPRINT

The videoprint command "prints" a formatted version of the document in memory to the TV or monitor screen. Most of

the print formatting commands will be obeyed if at all possible. A notable exception is the LM (left margin) command. You may stop the display by pressing the space bar, then continue again by pressing the space-bar again. ESC will interrupt the videoprint, returning you to the inner menu. If you now type C (Change), you will return to edit-mode with the cursor placed at the point at which videoprinting was interrupted.

During videoprinting you may scroll from side to side by: 1) pressing the space bar to stop the output. 2) pressing right arrow to move toward the right (and left to move to the left margin). On 80-column Apples, the whole screen display will scroll from side to side. On 40-column Apples the effect will not be seen on text already displayed but only on subsequent text.

CURRENT DRIVE DECLARATION

Pressing Z allows you to enter a current drive declaration (see chapter 8). This is the first of several non-visible options in the inner menu.

OPTION 1

The O1 command is exactly the same as the Draft command except that it allows you to specify the starting page for the draft.

OPTION 2

The O2 command is exactly the same as the videoprint command except that it allows you to specify the starting page for the videoprint.

OPTION 3

The O3 command allows you to send a draft to a disk-file. The draft will be fully formatted with exceptions related to the LM command and incorrect calculations of the inter-page gap. The purpose of this command is not to provide full "spooling" capacity, but rather to allow users who send messages to a computer timesharing service to format their documents into readable form before transmission. The user is not given the power to choose the name for the disk-file so produced. The system will construct a name by using the actual document's name and putting an asterisk * in the (normally blank) 9th position of the file name. Such documents are best not retrieved and edited using ZARDAX. You would run the risk of deleting your actual unformatted document. This is so because whenever ZARDAX retrieves a file it blanks the 9th position of the file-name. A subsequent Save would then delete your document in its original form!

OPTION 4

The O4 command allows you to do an uninterpreted "dump" of a text-file to the printer. ZARDAX will make no attempt to format the document and will make no interpretation of any character in the file except that CTRL-SHIFT-* will cause the usual conversion to a control-code. No linefeeds will be inserted into the output. Nothing will be assumed.

OPTION ZERO

The O0 command assists the user in splitting documents which are too large to fit into available memory. See chapter 9.

When you are in edit mode, you can enter text into your document or you can edit it and make changes, deletions, insertions. In general, commands in this mode are made by holding the CTRL key in conjunction with another key. It is not sufficient to press CTRL and **then** press the command key. You must hold CTRL down **while** pressing the command key. Then release the CTRL key.

Some commands cannot be aborted once entered. Others may usually be aborted by pressing the space-bar. If this fails, you should press ESC to go to the inner menu and then C to return to edit-mode.

The following commands are used in writing and altering documents:

CURSOR MOVES

CTRL-U (Up) Move the cursor up one line and place it at the left end of the line

CTRL-D (Down) Move the cursor down one line and place it at the left end of the line

CTRL-L (Left) Move the cursor one place to the left

CTRL-R (Right) Move the cursor one place to the right

CTRL-^ (^) Move the cursor ten lines upward. (CTRL-N has same effect as CTRL-^).

CTRL-v (v) Move the cursor ten lines downward

CTRL-B (Beginning) Move the cursor to the beginning of the document

CTRL-E (End) Move the cursor to the end of the document

TABBING

CTRL-T (Tab) Move the cursor to the next tab-stop to the right of the current position

CTRL-S (Set-tab) Set a tab-stop at the current cursor position

CTRL-C (Clear-tab) Clear the tab-stop at the current cursor position

EDITING

Right-Arrow Delete the character the cursor is on and move the cursor one place to the right

Left-Arrow Delete the character before the present one and move the cursor one space to the left

CTRL-M (Move) Move the present paragraph above or below the next one

CTRL-W (Wipeout) Delete text. Prompts for: A (all text above cursor), B (all text below cursor), F (text after cursor in current paragraph), or S (section from cursor up to CTRL-X mark).

CTRL-F (Find and Replace) Find a word or phrase after present cursor position (in order to replace it with another word or phrase). Prompts for Y (yes, replace it), N (no, don't), or A (replace

all after cursor). Press space-bar to drop out of find mode, with cursor positioned at found phrase. For later search of same phrase, simply press <RETURN> when prompted for the search phrase. If found phrase was underlined, replacement string will be automatically underlined. The search phrase may be up to 23 characters long.

CTRL-I (Insert) Insert a disk document beginning at the present cursor position. Will give catalog, then prompt for file code to insert.

CTRL-X (Mark) Place a marker here for use by the Wipeout or Put commands. It is unwise to insert more than one such mark in a document at any one time.

CTRL-P (Put) Save a section of the document to the disk. Save the section from the cursor up to the first marker found.

GO TO INNER MENU

ESC (ESCape) Go to the inner menu.

USER DEFINABLE COMMAND

CTRL-G causes an item to be entered from the current glossary. See chapter 6.

Keyboard Operation and Special Characters

Either SHIFT key shifts to upper case.

The CTRL key, used alone, locks the keyboard in upper case (with accompanying low beep). To unlock it again, press either SHIFT key (will "chirp").

To enter shifted special characters such as ^, <, >, and @, first lock the keyboard in upper case, then shift before pressing desired key.

Underlining (for printers capable of backspacing) is done by backing up over character at which underlining it to begin (e.g., with CTRL-L), then pressing CTRL-Z.

Remove underlining with a CTRL-Y.

Many print functions of ZARDAX are implemented by the use of print commands. Print commands always begin with the CTRL-ZERO character ≡. They always consist of two command characters. Sometimes they must be followed by a number to indicate some value to the command.

PAGE FORMATTING COMMANDS

≡LMn Sets a value for the left margin. Many other commands will use this value as a reference value. If no LM value is declared it will be assumed to be zero. The effect of LM10 would be to print 10 spaces at the beginning of each line.

≡RMn Sets a value for Right Margin. This position is relative to the left margin. Printing cannot be done to the right of this margin.

≡FLn Form Length. Declares the physical length of the sheets of paper in use. Measured in lines, not inches. Used in conjunction with PL to determine the size of the inter-page gap. If FL is set to zero, there will be no inter-page gap.

≡PLn Page Length. Declares the number of lines to be printed on each page. Used in conjunction with FL to determine the inter-page gap.

≡CO COntinuous. Declares that ordinary continuous computer stationery is being used. This is the assumed state unless there is a CS command.

≡CS Cut Sheets. Declares that single sheets of paper are in use. The computer will pause after printing each page to enable you to insert the next sheet of paper.

≡PNnn.cc Page Numbering. Set the page number to nn, and start numbering from the next page, positioning the number at the top of the page at position cc.

≡NN No Numbering. Turn off page numbering starting with the next top of page.

≡FD Footer Define. Define all text between here and the next ≡ to be the footer. But do not turn the footer on. This command should not be used while another footer is ON.

≡FO Footer On. Switch ON the most recently defined footer and print it at the bottom of all pages including the present page.

≡NF No Footer. Switch OFF the present footer. Do not print it at the bottom of this page or future pages.

≡HD Header Define. Define all text between here and the next ≡ to be the header. But do not turn the header on. This command shoud not be used while another header is ON.

≡HO Header On. Switch ON the most recently defined header and print it at the top of all pages starting from the next page.

≡NH No Header. Switch OFF the present header. Do not print it at the top of future pages.

TEXT FORMATTING ON THE PAGE

≡NP New Page. Do not print any more on the present page, but go to the top of the next page (as soon as this line is complete).

≡CPn Conditional new Page. Do not print any more on this page if there are fewer than n lines left on the page.

≡SKn SKip. Do not print anything on the next n lines, or until the top of the next page, whichever is closer.

≡MAn Margin. Temporary indentation. The present line and all subsequent lines are to be indented n positions from the left margin. The system will assume a starting value of 0 for MA.

≡INn INdent. Exactly the same as MA except that it takes effect on the next line.

≡DS DoubleSpace. Causes the system to print only on every second available line.

≡SS SingleSpace. Causes the system to revert to its normal state of printing on every line.

≡SH Space+Half. Causes line spacing to be wider than SS but narrower than DS. Not available on all printers.

≡JU JUstify. Causes the printing to be justified on both edges. Will not affect "short paragraphs", i.e. lines concluded with a RETURN before the right margin is reached.

≡NJ No Justify. Causes the printing to return to its ordinary state of not being justified.

≡TAn TAb. Tab across to the nth position. Not a highly recommended command. Use judiciously.

≡CE CEnter. Position "short-paragraphs" (see the JU command above) in the center of the text.

≡NC No Center. Revert to normal mode of not centering. Remember that this command (like most) takes effect in the present line and supercedes an earlier CE command in the same line.

≡RL Ragged Left. Instead of having the ragged edge of unjustified text or "short-paragraphs" on the right, put it on the left.

≡RR Ragged Right. Revert to the normal mode of putting the ragged edge on the right.

≡BF Bold Face. Initiate **bold** printing, and continue to do so until a NB command is reached. Not all printers will recognise this command.

≡NB Not Bold. Revert to the normal mode of printing without boldface.

≡DW Double Width. Print characters double width, and continue to do so until a SW command is found. Not all printers will recognise this command.

≡SW Single Width. Revert to the normal practice of printing characters single width.

≡EC Enhanced Characters. Print all characters from here on in enhanced mode, and continue to do so until a NE command is found. Not all printers will recognise this command.

≡NE Not Enhanced. Revert to the normal practice of not printing characters in enhanced mode.

≡SU Shift Up. Shift the print head up a small distance, before a ^{super}script or after a $_{sub}$script. Not all printers will recognise this command.

≡SD Shift Down. Shift the print head down a small distance, after a ^{super}script or before a $_{sub}$script. Not all printers will recognise this command.

≡PIn PItch. Horizontally the characters should be printed at n characters per inch. Values for n must be 10, 12 or 15. Not all printers will recognise this command.

≡LSn Line Spacing. Vertically the lines should be printed at n lines per inch. Values for n must be 6 or 8. Not all printers will recognise this command.

MISCELLANEOUS PRINTER COMMANDS

≡ST STop. When printing has gone this far, stop and wait. (used for example, if you wanted to change a print-wheel to print some part of your text in another type-face).

≡RD ReD. Change ribbon to red. Continue to print all words in red until a BK command is reached. Not all printers may recognise this command.

≡BK BlacK. Revert to normal practice of printing all text in black.

≡Z1 User-definable command 1. This has the effect that a programmer defines. The programmer will need to use the information available in chapters 21, 22, 25.

≡Z2 ditto

≡Z3 ditto

≡Z4 ditto

≡Z5 ditto **but** the effect of this command will be felt at the beginning of the current line, not at the position of the Z5 command.

≡Z6 ditto + same **but**

≡Z7 ditto + same **but**

THE KEYBOARD DURING PRINTING

The keyboard will recognise some commands while printing is in progress. The most notable is the ESC key which will usually cause all printing to cease permanently and will send you to the inner menu. If the ESC fails you might use CTRL-RESET.

The P key will cause a pause, and printing will not resume until the space-bar is pressed.

The R key will cause a restart (except during multiprinting).

The P and R keys will not work during videoprinting. But the space-bar will then work as a pause key.

Disclaimer: How soon the stop or pause will take effect is very dependent on your printer. Read the section on buffers in chapter 2.

SPECIAL KEYS

In edit-mode, most keys have the function shown on the keytop. Some special exceptions are noted here.

1. The space-bar can often be used to abort a command. If not, you can use ESC as mentioned below.

2. The ESC key will return you to the inner menu. You can return immediately to the edit-mode by pressing C.

3. CTRL-RESET will return you to the inner menu, but ESC is preferable.

4. The arrows are destructive. The left arrow deletes the character to the left of the cursor. The right arrow deletes the character the cursor is flashing.

5. The CTRL key used with certain number keys, provides access to some extra characters

1 \ 3 ` 4 | 6 [7] 8 { 9 }

6. The CTRL key used with zero enters a special character which is used to declare print commands.

7. The CTRL key used with * enters a special character which is used with the following character to send "control-codes" to printers.

8. The CTRL key used with 5 enters a tilde on the screen, but the system regards it as a non-expandable non-breakable space. (see page 4-25)

In all modes the ESC is a general-purpose stop command. It usually takes you to the inner menu. It has the same effect as CTRL-RESET but without the dangerous side-effects

that RESET might have. There are some occasions when ESC will not work, for example, during a retrieve. It will work (safely) during a save, but precisely what it will do depends on circumstances. If you really want to stop a save, ESC is a good attempt. Things might not turn out quite as you would like, but will usually turn out better than if you had not pressed the ESC. RESET during a save is a very dangerous affair! ESC is not really dangerous, but its effects are a little hard to predict.

SPECIAL CHARACTERS

At an earlier moment in our history, Computer Solutions used to claim that ZARDAX could print any ASCII code. That is not strictly correct (unless maybe a programmer judiciously defined the Z printer commands).

The whole printable ASCII set may be printed, except for the underline (ASCII $5F) and the tilde (ASCII $7E). The underline is no loss, as you can enter spaces and then underline them. The tilde is a loss.

Also the { cannot be printed during a Print, although it can be printed during a draft or a multiprint.

Finally the | cannot be printed in some circumstances. Immediately after a numeric argument to a printer command it will be interpreted as a terminator (see page 4-25). Elsewhere it's OK.

In the non-printable ASCII set, the principal loss is the DEL (ASCII $7F), which cannot be printed at all. The rest of the ASCII control-codes can be printed. All you need to do is to insert the the character CTRL-* (actually a DEL), and follow it with a character. For example, CTRL-*

To print control-codes, type CTRL-* followed by the character shown in the last column of this table:

Character	Hex	Decimal	CODE
NUL	00	0	@
SOH	01	1	A
STX	02	2	B
ETX	03	3	C
EOT	04	4	D
ENQ	05	5	E
ACK	06	6	F
BEL	07	7	G
BS	08	8	H
HT	09	9	I
LF	0A	10	J
VT	0B	11	K
FF	0C	12	L
CR	0D	13	M
SO	0E	14	N
SI	0F	15	O
DLE	10	16	P
DC1	11	17	Q
DC2	12	18	R
DC3	13	19	S
DC4	14	20	T
NAK	15	21	U
SYN	16	22	V
ETB	17	23	W
CAN	18	24	X
EM	19	25	Y
SUB	1A	26	Z
ESC	1B	27	[
FS	1C	28	\
GS	1D	29	]
RS	1E	30	^
US	1F	31	CTRL-ZERO

If the user really feels the loss of the tilde and the {, a programmer may be able to redefine the function to another character, but there will have to be some loss of characters from the printable set.

Section V
Installing Zardax

Chapter 17
Hardware Installation

Before the ZARDAX system is used, you will have to install it. There are two parts to this installation. You must install all the hardware the system requires, and then you must install the ZARDAX software so that it will recognise what kind of system you have. The software installation will be covered in the next chapter.

The most important parts of the system to install will be the computer itself, one or more disk drives, the video monitor and the printer, together with any other accessories you may have purchased. The installation of all these parts should be done by the dealer from whom you purchased the system. However, it is a good idea for you to get the dealer to teach you how to put together the various parts of the system. At some time, you may need to take it apart to move it, or to send some part back for repair or maintenance.

The only specific piece of hardware you must install for ZARDAX to operate is a small keyboard modification. The keyboard modification will plug directly into your Apple without any soldering, providing your Apple is of fairly recent vintage. For older Apples, you may need to consult chapter 24, and you may need a knowledgeable friend with a soldering iron. Of course your dealer should easily be able to help in this case.

The keyboard mod supplied with this system is called the Type 2 mod.

Before making the connections, you are going to have to open the case of your Apple. Your dealer will already have shown you how to do this. Be careful and make sure that **the power is off.**

Now stand near the keyboard and look in underneath the

keyboard. On the right you will see a row of silver pins connecting a circuit board to the keyboard. These pins are numbered 1 to 25 from the left. Connect the red connector to pin 3 and the black connector to pin 24.

Older Apples don't have the row of silver pins, and you may have to get expert assistance from your dealer in this case. Show him Chapter 24.

You will have to temporarily remove an IC (integrated circuit). You will need a small tool called an IC extracter, obtainable from your dealer. The IC you are going to remove is second from the right, about 4 inches from the back of your Apple. Immediately in front of it is written "558". Once you have located this IC, carefully remove it with the IC extracter. Observe all the usual precautions to reduce static electricity. Now in its place insert your type-2 device. Check its orientation. It must be oriented so that the red and black wires go through the device and connect to the legs closest to the rear of the Apple. Once it is correctly inserted, replace the IC you extracted, but now you will put it in the top of your type-2 device. Be careful to put it back with the same orientation it had before you extracted it.

IF YOU LACK CONFIDENCE about your ability to do all this correctly, go to the dealer who sold you your ZARDAX licence, and he will certainly assist.

NOTE FOR USERS OF VIDEX ENHANCER][: You will not need to install the ZARDAX keyboard mod as supplied by us. The Videx Enhancer][makes our keyboard mod unnecessary.

YOUR NOTES:

Chapter 18
Software Installation

The second part of installation is the software part. The ZARDAX program itself must be told what sort of system you have. This is done in the following way:

You will use a special program called SETUP. This program will ask you a series of questions about your computer and what accessories you have. When you have answered all the questions, certain information will be recorded on the ZARDAX disk itself.

Later on, your system may change in some way, perhaps because you purchase other accessories which ZARDAX can use. If so, you can easily use the SETUP program once again, this time answering the relevant questions differently. The ZARDAX disk will then forget your previous answers and record the most recent set of answers.

What if, through your inexperience, you answer a question wrongly? No disaster will occur. ZARDAX may appear not to cooperate in some way. Should that happen, try using SETUP again and try to get the answers right. You can keep doing this as many times as necessary. Once you have got all the answers right, it would be good for you to write them down so that you will remember them when (and if) it is necessary to use SETUP again.

For SETUP to correctly record the answers, it is necessary that the write-protect sticker be removed from the ZARDAX disk. This is a small sticker wrapped around one edge of the disk. It covers a small notch in the black case of the disk. When you have finished with SETUP you should replace the write-protect sticker with a new one.

The very first time you attempt to use ZARDAX, it will force you to answer the SETUP questions. Later on, you will have to explicitly decide to use SETUP if you need to. It will

then be necessary for you to disobey the usual demand "Press RETURN to continue loading". Instead you should press S (for Setup), and ZARDAX will not continue. Instead, SETUP will take over.

The final general word about SETUP concerns the fact that you have two copies of ZARDAX. One of your copies is going to be a spare, should your main copy ever get damaged. At this stage it would be a good idea for you to SETUP both your copies. In the first few days you should test both copies to see if they work. It's always possible that we have sent you a "bad copy". If that happens return it to us within one month of purchasing the licence. We'll replace it free of charge. After that, we'll assume that the damage was caused by you, and we will have to impose service charge.

USING SETUP

Simply follow the questions carefully and answer what you think is most likely. If it later appears that ZARDAX is misbehaving because you answered the questions wrongly, either have another attempt, or return to your dealer for advice.

Firstly, SETUP will ask you some questions (maybe only one) about your video display. If in doubt, you probably have a standard 40-column Apple video display. If you are asked the question "50 or 60 Hz", you should answer 60 if you are in the USA or 50 if you are in Australia or Europe.

Secondly, SETUP will test your keyboard mod and find out which type it is. To do this, it will require you to press three keys. You can't go wrong.

Thirdly, SETUP will ask you which kind of printer you have. Users with the best letter-quality printers will probably answer "2", which refers to printers like the NEC 5515, the Qume Sprint 5, and other "Diablo-compatible" printers. Most other users will have to answer "other".

Fourthly, SETUP will need to determine what kind of printer interface you have installed in your Apple. There will be no difficulty if your printer interface is a standard Apple one (or equivalent). Otherwise, the questions may become too hard for you to answer and you may need to consult your dealer.

Section VI
You Have Been Warned

Chapter 19
The Big Warning

HOW CAN WE EMPHASIZE THIS ENOUGH?

The common misconception is that computers never make mistakes! What could be further from the truth?

Firstly there is hardware error. Some IC seizes up just after you've spent two hours typing, and before you've saved your document. It's all gone!

Or the computer gets too hot internally and dies! (temporarily!)

Or the program has a "bug". Maybe even ZARDAX has a bug. Most large programs have them. A bug is not to be defined as some feature of the program you dislike, or as some missing feature of the program you would wish to see included. A bug is a positive mistake. The program in some particular circumstance doesn't function as it should. It may even attempt to erase your disk or do some other dastardly deed. While we don't believe ZARDAX has bugs, we'd be insane to pretend we were absolutely certain. Such a bug could do horrendous damage to your documents!

THE LESSON

To guard against dire effects of bugs or hardware malfunctions or power failures, you should frequently save your document during writing. And you should make frequent extra copies, on different disks, of your valuable documents.

And if you fear fire, you should keep the copies in different places.

Section VII

Technical Information and Miscellany

Chapter 20
System Operation

DOCUMENTS IN MEMORY

Documents in memory are stored in ASCII format. Exceptions concern the storage of control-codes, which (except for $0D) are stored in two bytes. The first byte consists of the DEL code ($7F), and the second of a code between $40 and $5F. When printing or saving to disk the byte pairs are concatenated to the single control-code.

The printable ASCII set is stored in normal format, except that the high bit is significant. If the high bit is set, the character is not underlined. If the high bit is clear, the character is underlined. This distinction is carried across on the text-files on disk.

On sending characters to the printer interface, the high bit is set. The printer driver must clear this bit if necessary. This explains the fact that when the TANDY daisy wheel printer is used with the system, it is necessary for the driver to clear the high bit, as can be seen in the listing in chapter 25.

21: Parameters and Drivers

Much of the important information needed by the system is held in the space $0800 to $09FF during execution. When SETUP is running, it holds these pages at $4800. $4800 is the value of the Applesoft variable BA in SETUP.

The first 64 locations are used to hold a variety of information, some of which is set by SETUP. The space from $0840 to $08BF is reserved for the printer-driver. $08C0 to $08FF is reserved space. $0900 to $09FF is used to store two subroutines necessary to set pitch and line-spacing values for incremental spacing printers, together with a large number of strings used to control the printer.

To summarise:

$0800-$083F SYSBUF
$0840-$08BF DRIVER
$08C0-$08FF Reserved
$0900-$09FF PRINTER PARAMETERS

A set of listings in chapter 25 shows how each of these parts works.

CHANGING THE SCREEN CHARACTER SET

If you have Apple's DOS TOOL KIT, you might want to change the HIRES character set provided. To extract it, BLOAD IO-HIRES,A$2900 then BSAVE CS.SET, A$2D00, L$300. To reinsert it, BLOAD IO-HIRES, A$2900 then BLOAD YOUR.SET, A$2D00 then BSAVE IO-HIRES, A$2900, L$700

22: Changing SETUP

It is possible for you to make alterations to SETUP to make the system behave differently. You might need to set up your system in some non-standard way. Or your printer might be capable of some feature which is not yet implemented in the software drivers.

If you do wish to change SETUP you are advised not to monkey with the copy of SETUP on the ZARDAX disk itself. You should make a copy of it onto another disk and give it a new name, like SETUP.MINE for example. If you follow the rules below, you can cause no lasting damage to your ZARDAX disk. If you fail, you merely run our version of SETUP and everything gets fixed. (That assumes you haven't altered any other files on our disk).

The general principle of the changes is that all additions to SETUP should be made in the empty subroutine between lines 10000 and 20000. After SETUP executes the RETURN at line 20000, it expects the ZARDAX disk to be in the drive and it proceeds to write out all the information between $4800 and $6000.

You run grave risks if you mess with other parts of SETUP. When you run your version of SETUP, it will ask you all the usual questions, and set up $4800 to $49FF on the basis of your answers. Your subroutine at line 10000 will then be called, and it can make other alterations to the required locations. After you have finished the SETUP apply a write-protect tab to ZARDAX. You may have inadvertently damaged ZARDAX's DOS. It would be awful to see ZARDAX self-destruct!

To see what your special version of SETUP can do, you'll have to read chapter 21 and you'll have to **study** the listings in chapter 25.

SPECIFICATIONS

This Word Processor operates on the Apple II computer. It requires:

1. an Apple II Plus, (not unduly modified)
   or an Integer Apple with Autostart + ROM Applesoft
   or an Integer Apple with Language Card.
   (Last requires 2-stage boot)

2. 48K of RAM memory

3. a single Apple Disk II drive, DOS 3.3 (16 sector)

4. a printer with interface
   The system has special interfaces for the following incremental-spacing printers: NEC 5510 and 5515, Radio Shack Daisy wheel, Vista V300, certain Diablo printers, the Qume Sprint 5, and others using the NEC 5515 format. It has also been used with the Centronics 737, Epson MX80, etc., but special implementation of features like underlining will probably be required.

5. a small modification to the keyboard to permit shifting and shift lock.

In addition, the computer may contain, optionally:

6. One of the following 80-column terminal cards:

DoubleVision	(Computer Stop, 16919 Hawthorne Blvd., Lawndale, CA 90260)
SmartTerm	(ALS, 491 Macara Ave., Suite 1009, Sunnyvale, CA 94086)
Videx	(Videx, 897 N.W. Grant Ave., Corvallis, OR 97330)
Vision-80	(Vista Computing, 1317 E. Edinger Ave., Santa Ana, CA 92705)

   If an 80-column board is used, a monitor capable of 80 column operation must also be employed.

7. A language card or 16K RAM card.

CHARACTERISTICS

1. Uses standard DOS 3.3 text files, with special read/write routines yielding typical read times:

file Size (sectors)	Time (seconds)
30	9
60	16
80	21

2. On standard (40-column) Apple II, system uses HIRES screen and software character generator (no lower case converter chip needed).

   On 80-column Apples, program uses video card's character set.

3. Maximum file size depends on optional equipment (6 & 7, above):

Configuration	Max. File Size
40-column, 48K	13.5K
40-column, 64K	23.5K
80-column, 48K	21.5K
80 column, 64K	31.5K

Chapter 24
The Keyboard Modification

1. Type 1

This modification is done by running 2 short pieces of wire from the SHIFT and CTRL keys to a 16 pin DIP header which plugs into the game I.O. socket. The plug should be removed to allow use of the paddles, if required.

At the GAME I/O end the two wires are attached to pins 2 and 3. It is absolutely irrelevant to ZARDAX which wire is attached to which pin. SETUP figures that out.

Type 2 (supplied)

This mod does not connect to the GAME I/O socket. It therefore enables devices to be plugged into the GAME I/O socket, however it should be noted that PDL inputs 2,3 are disabled by this mod.

This type mod connects to a device which consists of a dip socket (16-pin) soldered on top of a dip header. But pins 8,9 of the socket are cut off. Then the two wires are connected to the upper pins 8,9 on the **header** (which is below, remember!). It is irrelevant to ZARDAX which wire is connected to pin 8 and which is connected to pin 9. SETUP figures that out.

This structure replaces the 558 IC at location H13. The 558 IC is then plugged into the top of this structure.

Other types

Other types could be invented. All that is required is that the two wires connect to any two of the following five locations: pins 2,3 or 4 of GAME I/O or sockets 8,9 at location H13 on the main board. SETUP will be happy with any two of these five locations in any combination.

You can even go further and disable the part of SETUP which checks for the mod, then insert your own subroutines at the beginning of SYSBUF. See chapters 22 and 25.

CONNECTING TO THE KEYBOARD PROPER

Newer Apples

Remove the Apple's top, and look back at the underside of the keyboard. If you see a row of thin metal pins connecting between two circuit boards, then (good for you!) you have only a simple connection task. If you do not, then go on to the "Older Apples" section, below.

Connect the red and black clips on the end of the two wires to pins 3 and 24. The pins are numbered 1 to 25 from the left.

Older Apples

Remove the Apple's top, then look at the keyboard card, just behind and in between the 7 and 8 keys. If there is a black integrated circuit chip, and just toward the front of this a rice-grain sized cylindrical resistor with the color bands yellow, violet and red (ignore the gold), then you have an "oldest Apple," and you should go on to the next section.
If the red and black probe tips were pre-soldered to the connector wires, cut them off or unsolder them. The wires may be altogether too short, in which case you will have to replace them.

Turn the APPLE upside-down on a soft cloth. Remove the 4 pan head screws from under the keyboard, and the 3 countersunk screws from each side of the case. Carefully separate the baseplate and the cover, unplugging the keyboard cable from

the motherboard. The rear of the keyboard should now be visible.

Locate the CTRL key, switch number 28.

Solder one of the two wires to the right-hand pin of CTRL switch 28. This is the side of the switch not in common with the other switches.

Locate the SHIFT key, switch number 42.

Solder the other wire to the right-hand pin of SHIFT switch 42 (again, the side of the switch not in common with other keys).

Oldest Apples

If you are here, with an Apple whose serial number is in the low thousands, and the resistor noted above, then your CTRL key is logically reversed from CTRLs on newer machines, and you will have to invert CTRL with either a logic gate or transistor circuit. If you don't understand the last sentence, then head for your dealer now. Alternatively, you will have to study the listing of SYSBUF in Chapter 25 and use a new SETUP (see chapter 22) to replace some NOPs with some EOR #$FFs.

Chapter 25
Listings

```
080C- FF        0360 LFEEDS     .BY $FF
080D- 10        0370 SLOTPR     .BY $10   ;PRINTER SLOT
                0380
                0390 ::::LFCHAR IS AN ASCII CHARACTER WHICH WILL
                0400 ::::CAUSE THE PRINTER TO ADVANCE ONE LINE.
                0410
080E- 8A        0420 LFCHAR     .BY $8A
                0430
                0440 ::::PRTYP IS ZERO IF PRINTER CAN MICRO-JUSTIFY.
                0450
080F- 00        0460 PRTYP      .BY $00
                0470
                0480
                0490
0810- 00        0500 DJUST      .BY 0     ;DEFAULT JUSTIFICATION OFF
0811- 00        0510 DCENT      .BY 0     ;DEFAULT CENTERING OFF
0812- 41        0520 DRM        .BY $41   ;DERAULT R.MARGIN 65
0813- 00        0530            .BY $00   ;RESERVED
0814- 36        0540 DLINSN     .BY $36   ;DEFAULT PAGELENGTH 54
0815- 42        0550 DFORML     .BY $42   ;DEFAULT FORMLENGTH 66
0816- FF        0560            .BY $FF   ;RESERVED
0817- 0C        0570 DPITCH     .BY $0C   ;DEFAULT 10 CHARS / INCH
0818- 00        0580            .BY $00   ;RESERVED
0819- 08        0590 DLPI       .BY $08   ;DEFAULT LINES PER INCH 6
081A- 00        0600            .BY $00   ;RESERVED
                0610
                0620
                0630
081B- 00 00     0640            .BY $00 $00    ;RESERVED
081D- 00 00     0650            .BY $00 $00    ;RESERVED
081F- 00        0660            .BY 0          ;RESERVED
0820- 00        0670            .BY 0          ;RESERVED
0821- 00        0680            .BY 0          ;RESERVED
0822- 00 00     0690            .BY $00 $00    ;RESERVED
0824- 00        0700            .BY 0          ;RESERVED
0825- 00        0710            .BY 0          ;RESERVED
0826- 00 00 00  0720            .BY 0 0 0      ;RESERVED
0829- 00 00 00  0730            .BY 0 0 0      ;RESERVED
082C- 00 00 00  0740            .BY 0 0 0      ;RESERVED
082F- FC        0750 TERMINAT   .BY 252  '|' for use after numeric
                                          arguments in ≡ commands.
0830- 7F        0760 MARKER     .BY 127    ;CTRL-X
0831- FE        0770 NONSPAC    .BY 254    ;sacrifice the tilde
0832- FF        0780 FOOTTYP    .BY $FF    ;or 0 for old kind
0833- 9C        0790 VISSPAC    .BY 156    ;160 if you don't
                                          like a visible space!
0834- 00        0800 RRIGHT     .BY 0     ;DEFAULT RAGGED RIGHT!
0835- 00        0810 LFTMGN     .BY 0     ;DEFAULT LEFT MARGIN
0836- FB        0820 LABBGN     .BY $FB   ; [ for label starts
0837- FD        0830 LABEND     .BY $FD   ; ] for label ends
0838- 00 00     0840            .BY 0 0   ;RESERVED
                0850
                0860
                0870 ::: DEFAULTS FOR CURRENT DRIVE AND
                0880       FOR TRANSFER DRIVE
                0890
083A- 06        0900 DOCSLT     .BY $60
```

This chapter contains a number of useful listings which can be used by the experienced programmer to make a number of changes to the way ZARDAX operates.

Listing 1: SYSBUF

During SETUP, this file resides at BA ($4800). The file is 64 bytes long. Programs should not alter RESERVED locations. Other locations should not be lightly altered. We do not guarantee the entire effectiveness of any alteration made in SYSBUF. No lasting damage to ZARDAX can result from such alterations however. (Providing you follow the rules and providing you always execute ZARDAX with a write-protect tab). The rules concern the way the alterations are made. Rule 1: Always make the alterations from within SETUP. Rule 2: Make the alterations by inserting new program lines between line 10000 and 20000. Rule 3: Make the alterations by POKEing or by BLOADing. Rule 4: When SETUP is running, the addresses shown here are offset by $4000 to begin at $4800 (the value of the Applesoft variable BA). These rules apply to alterations to all the memory areas shown in this chapter.

```
                0010            .BA $0800
                0020
                0030 ************************************************
                0040
                0050             SYSBUF
                0060
                0070
                0080
                0090 COPYRIGHT 1981 COMPUTER SOLUTIONS
                0100
                0110 ************************************************
                0120
                0130
                0140
                0150 ::::SHIFT AND CTRL ARE TWO SUBROUTINES CALLED BY
                0160 ::::THE KEYBOARD INPUT ROUTINES TO SEE IF THE
                0170 ::::SHIFT OR CTRL KEYS ARE CURRENTLY HELD DOWN.
                0180 ::::ON RETURN, THE SIGN BIT IS CHECKED.  IF IT
                0190 ::::PLUS, THE KEY IS BEING PRESSED.
                0200
                0210
0800- AD 66 C0  0220 SHIFT      LDA $C066
0803- EA        0230            NOP       ;COULD BE EOR #$FF!
0804- EA        0240            NOP
0805- 60        0250            RTS
0806- AD 67 C0  0260 CTRL       LDA $C067
0809- EA        0270            NOP
080A- EA        0280            NOP       ;COULD BE EOR #$FF!
080B- 60        0290            RTS
                0300
                0310
                0320 ::::SET LFEEDS TO ZERO IF YOU WANT TO PREVENT
                0330 ::::THE SOFTWARE SENDING (TO PRINTER) A LF
                0340 ::::AFTER EACH CR.
                0350
```

```
0846- 20 66 08 0260          JSR SWAP1
0849- 68       0270          PLA
084A- 48       0280          PHA
084B- 20 ED FD 0290          JSR $FDED
084E- 68       0300          PLA
084F- 48       0310 SWAP2    PHA
0850- A5 36    0320          LDA *CSWL
0852- 8D 8D 08 0330          STA PRVEC
0855- A5 37    0340          LDA *CSWL+1
0857- 8D 8E 08 0350          STA PRVEC+1
085A- AD 8F 08 0360          LDA STVEC
085D- 85 36    0370          STA *CSWL
085F- AD 90 08 0380          LDA STVEC+1
0862- 85 37    0390          STA *CSWL+1
0864- 68       0400          PLA
0865- 60       0410          RTS
0866- A5 36    0420 SWAP1    LDA *CSWL
0868- 8D 8F 08 0430          STA STVEC
086B- A5 37    0440          LDA *CSWL+1
086D- 8D 90 08 0450          STA STVEC+1
0870- AD 8D 08 0460          LDA PRVEC
0873- 85 36    0470          STA *CSWL
0875- AD 8E 08 0480          LDA PRVEC+1
0878- 85 37    0490          STA *CSWL+1
087A- 60       0500          RTS
087B- AD 0D 08 0510 ENTRY    LDA SLOTPR
087E- 4A       0520          LSR A
087F- 4A       0530          LSR A
0880- 4A       0540          LSR A
0881- 4A       0550          LSR A
0882- 09 C0    0560          ORA #$C0
0884- 8D 8E 08 0570          STA PRVEC+1
0887- A9 00    0580          LDA #0
0889- 8D 8D 08 0590          STA PRVEC
088C- 60       0600          RTS
088D- 00 00    0610 PRVEC    .BY 0 0
088F- 00 00    0620 STVEC    .BY 0 0
               0630          .EN
```

LABEL FILE:

```
CSWL=0036              SLOTPR=080D          USENT=0840
USDRIV=0843            SWAP2=084F           SWAP1=0866
ENTRY=087B             PRVEC=088D           STVEC=088F
<end of label file>
```

Listing 3

This driver is used if a printer is connected through an APPLE PARALLEL

```
083B- 01       0910 DOCDRV   .BY $01
083C- 00       0920 DOCVOL   .BY $00
083D- 06       0930 TRASLT   .BY $60
083E- 01       0940 TRADRV   .BY $01
083F- 00       0950 TRAVOL   .BY $00
               0960          .EN
```

--- LABEL FILE: ---

```
CTRL =0806             DCENT =0811          DFORML =0815
DJUST =0810            DLINSN =0814         DLPI =0819
DOCDRV =083B           DOCSLT =083A         DOCVOL =083C
DPITCH =0817           DRM =0812            FOOTTYP =0832
LABBGN =0836           LABEND =0837         LFCHAR =080E
LFEEDS =080C           LFTMGN =0835         MARKER =0830
NONSPAC =0831          PRTYP =080F 26       RRIGHT =0834
SHIFT =0800            SLOTPR =080D         TERMINAT =082F
TRADRV =083E           TRASLT =083D         TRAVOL =083F
VISSPAC =0833

<end of file>
```

Listing 2

See the rules at the beginning of the chapter! This driver is specified by ZARDAX when an "other" interface is used, that is, an interface which is not <u>directly</u> compatible with Apple Pascal.

```
               0010 ***********************************************
               0020
               0030  PRINTER DRIVER FOR INTERFACES WITH DRIVERS
               0040    IN PROM USING PR# APPLE CONVENTIONS
               0050
               0060 COPYRIGHT 1981 COMPUTER SOLUTIONS
               0070
               0080 ROUTINE AT USENT SET UP FOR THE FIRST
               0090 CALL TO BE MADE TO USDRIV.
               0100 ROUTINE AT USDRIV EXPECTS CHARACTER IN ACC.
               0110 MUST RESTORE ALL REGS.
               0120
               0130 ***********************************************
               0140
               0150
               0160          .BA $0840
               0170
               0180
               0190 CSWL     .DE $36
               0200 SLOTPR   .DE $080D
               0210
               0220
0840- 4C 7B 08 0230 USENT    JMP ENTRY
0843- 09 80    0240 USDRIV   ORA #$80       JUST IN CASE!
0845- 48       0250          PHA
```

interface (or equivalent). This driver has the marvellous advantage that it clears the low-bit and is thus compatible with TANDY'S Daisy Wheel Printer.

```
0010 ************************************************
0020
0030  PRINTER DRIVER FOR THE APPLE PARALLEL INTERFACE
0040
0050
0060 COPYRIGHT 1981 COMPUTER SOLUTIONS
0070
0080 ROUTINE AT USENT SET UP FOR THE FIRST
0090 CALL TO BE MADE TO USDRIV.
0100 ROUTINE AT USDRIV EXPECTS CHARACTER IN ACC.
0110 MUST RESTORE ALL REGS.
0120
0130 ************************************************
0140
0150
0160          .BA $0840
0170
0180
0190 CSWL     .DE $36
0200 SLOTPR   .DE $080D
0210
0220
0230
0240
0840- 4C 4E 08 0250 USENT    JMP ENTRY
0843- 29 7F    0260 USDRIV   AND #127       MAKE COMPATIBLE WITH
               0270                         TANDY PRINTER.
0845- 2C C1 C1 0280 LOOP      BIT $C1C1
0848- 30 FB    0290          BMI LOOP
084A- 8D 90 C0 0300          STA $C090
084D- 60       0310          RTS
084E- AD 0D 08 0320 ENTRY     LDA SLOTPR
0851- 18       0330          CLC
0852- 69 80    0340          ADC #$80
0854- 8D 4B 08 0350          STA LOOP+6
0857- 4A       0360          LSR A
0858- 4A       0370          LSR A
0859- 4A       0380          LSR A
085A- 4A       0390          LSR A
085B- 09 C1    0400          ORA #$C0
085D- 8D 47 08 0410          STA LOOP+2
0860- 60       0420          RTS
               0430          .EN
```

Listing 4

See the rules at the beginning of the chapter! This is the most common version when used with incremental spaced printers. Close study will enable the programmer to produce a version for dot-matrix printers to implement underlining etc. When the user specifies an "other" printer ZARDAX doesn't automatically assume much about what's possible. Your own version of this page could be BLOADed in by SETUP with a command such as PRINT CHR$(4) "BLOAD MY.PARAMETERS, A"BA+256.

```
0010 ************************************************
0020
0030      PRINTER PARAMETERS
0040
0050 Copyright 1981 Computer Solutions
0060
0070
0080 This version for Diablo-compatible printers such as
0090  'Qume Sprint 5'  'Vista V300'  'NEC 5515'  'NEC 5525'
0100   and other compatible letter-quality printers.
0110
0120 ************************************************
0130
0140  This section of memory may need specific re-writing
0150  to take full advantage of all the printer's
0160  capabilities.
0170
0180  During execution, this page resides at $0900
0190
0200 ************************************************
0210
0220
0230 ::::::::::::::::::::::::::::::::::::::::::::::
0240 SETPTCH is a routine which is called when a change
0250         of 'pitch' is demanded.  The routine begins
0260         with the value (in 1/120ths of an inch)
0270         which is to be the inter-character spacing.
0280         On entry the value is in the accumulator.
0290         On exit acc is undefined, other regs
0300           should not have been disturbed.
0310         After exit, the string at 'OUTPTCH' will be
0320           sent to the printer.
0330
0340         The purpose of this routine is to make any
0350         changes to strings below, necessitated by the
0360         change of pitch.
0370
0380          .BA $0900
0900- 8D 86 09 0390 SETPTCH  STA AFTBOLD+2
0903- CE 86 09 0400          DEC AFTBOLD+2
0906- 8D 8A 09 0410          STA AFTBOLD+6
0909- EE 8A 09 0420          INC AFTBOLD+6
090C- 8D 72 09 0430          STA OUTPTCH+2
090F- EE 72 09 0440          INC OUTPTCH+2
0912- 60       0450          RTS
               0460
               0470
0480 ::::::::::::::::::::::::::::::::::::::::::::::
0490 SETLS is a routine which is called when a change of
0500     'line spacing' is demanded. The routine begins
0510     with the value (in 1/48ths of an inch)
```

```
                0520     which is to be the inter-line spacing.
                0530     On entry the value is in the accumulator.
                0540     On exit acc is undefined, other regs
                0550     should not have been disturbed.
                0560     After exit, the string at 'OUTLS' will be
                0570     sent to the printer.
                0580
                0590     The purpose of this routine is to make any
                0600     changes to strings below, necessitated by the
                0610     change of line-spacing.
                0620
                0630
                0640          .BA $0920
0920- 8D 6A 09  0650 SETLS    STA OUTLS+2
0923- EE 6A 09  0660          INC OUTLS+2
0926- 8D 96 09  0670          STA HLFLNFD+6
0929- EE 96 09  0680          INC HLFLNFD+6
092C- 8D A3 09  0690          STA HLFLNFDU+7
092F- EE A3 09  0700          INC HLFLNFDU+7
0932- 8D AE 09  0710          STA SHEXTRA+6
0935- EE AE 09  0720          INC SHEXTRA+6
0938- 4A        0730          LSR A
0939- 8D AA 09  0740          STA SHEXTRA+2
093C- EE AA 09  0750          INC SHEXTRA+2
093F- 60        0760          RTS
                0770
                0780
                0790
                0800 ::::::::::::::::::::::::::::::::::::::::::::::::
                0810 SP1/60 is a string of up to 8 bytes in length.
                0820      The last byte must be zero. Unused bytes
                0830      should also be zero.
                0840      The string is sent when the word processor
                0850      wishes the print head advanced 1/60th of an inch.
                0860         The string OUTPTCH is then sent also.
                0870
                0880
                0890
                0900 The four following strings are similar
                0910
                0920
                0930
                0940          .BA $0940
0940- 1B 1F 03  0950 SP1/60   .BY $1B $1F $03 $20 $00 $00 $00 $00
0943- 20 00 00
0946- 00 00
0948- 1B 1F 05  0960 SP2/60   .BY $1B $1F $05 $20 $00 $00 $00 $00
094B- 20 00 00
094E- 00 00
0950- 1B 1F 07  0970 SP3/60   .BY $1B $1F $07 $20 $00 $00 $00 $00
0953- 20 00 00
0956- 00 00
0958- 1B 1F 09  0980 SP4/60   .BY $1B $1F $09 $20 $00 $00 $00 $00
095B- 20 00 00
095E- 00 00
0960- 1B 1F 0B  0990 SP5/60   .BY $1B $1F $0B $20 $00 $00 $00 $00
0963- 20 00 00
```



```
0966- 00 00
                1000
                1010
                1020
                1030 ::::::::::::::::::::::::::::::::::::::::::::::::
                1040 OUTLS is a string sent to printer to restore
                1050 or set the current line spacing.
                1060
                1070 This string like all below must terminate with a zero
                1080 and have zeroes in unused locations.
                1090
                1100
0968- 1B 1E 09  1110 OUTLS    .BY $1B $1E $09 $00 $00 $00 $00 $00
096B- 00 00 00
096E- 00 00
                1120
                1130 :::::::OUTPTCH is a string sent to printer to::::::::
                1140 :::::::restore or set the current character-spacing::
                1150
0970- 1B 1F 0D  1160 OUTPTCH  .BY $1B $1F $0D $00 $00 $00 $00 $00
0973- 00 00 00
0976- 00 00
                1170
                1180 ::::BEFBOLD is a string sent to the printer between
                1190 ::::first and second impression for a bold-face
                1200 ::::character.  This string positions the head for the
                1210 ::::second impression.
                1220
0978- 08 1B 1F  1230 BEFBOLD  .BY $08 $1B $1F $02 $20 $00
097B- 02 20 00
097E- 00 00 00  1240          .BY $00 $00 $00 $00 $00 $00
0981- 00 00 00
                1250
                1260 ::::AFTBOLD is a string sent to the printer after the
                1270 ::::second impression for a bold-face character.
                1280 ::::This string should position the head for the next
                1290 ::::character to be printed and should restore pitch
                1300 ::::  if necessary.
                1310
0984- 1B 1F 0B  1320 AFTBOLD  .BY $1B $1F $0B $20 $1B $1F
0987- 20 1B 1F
098A- 0D 00 00  1330          .BY $0D $00 $00 $00 $00 $00
098D- 00 00 00
                1340
                1350 ::::HLFLNFD is a string to position the paper before a
                1360 ::::subscript or after a superscript.
                1370 ::::Should restore line-spacing if necessary.
                1380
0990- 1B 1E 04  1390 HLFLNFD  .BY $1B $1E $04 $0A $1B $1E
0993- 0A 1B 1E
0996- 09 00 00  1400          .BY $09 $00 $00 $00 $00 $00
0999- 00 00 00
                1410
                1420 ::::HLFLNFDU is a string to position the paper after a
                1430 ::::subscript or before a superscript.
                1440 ::::Should restore line-spacing if necessary.
                1450
```

```
099C- 1B 1E 04 1460 HLFLNFDU .BY $1B $1E $04 $1B $0A $1B
099F- 1B 0A 1B
09A2- 1E 09 00 1470          .BY $1E $09 $00 $00 $00 $00
09A5- 00 00 00
               1480
               1490 ::::SHEXTRA is a string which is sent after each
               1500 ::::cr/lf when the 'SH' command is in operation.
               1510 ::::The string should also restore line-spacing if
               1520 ::::necessary.
               1530
09A8- 1B 1E 05 1540 SHEXTRA  .BY $1B $1E $05 $0A $1B $1E
09AB- 0A 1B 1E
09AE- 09 00 00 1550          .BY $09 $00 $00 $00 $00 $00
09B1- 00 00 00
               1560
               1570 ::::RED is a string which is sent when the ribbon
               1580 ::::color is to be set to red.
               1590
09B4- 1B 41 00 1600 RED      .BY $1B $41 $00 $00 $00 $00
09B7- 00 00 00
               1610
               1620 ::::BLACK is a string which is sent when the ribbon
               1630 ::::colour is reset to black.
               1640
09BA- 1B 42 00 1650 BLACK    .BY $1B $42 $00 $00 $00 $00
09BD- 00 00 00
               1660
               1670 ::::BEFUND is a string to be sent to the printer
               1680 ::::before each underlined character.
               1690
09C0- 00 00 00 1700 BEFUND   .BY $00 $00 $00 $00
09C3- 00
               1710
               1720 ::::AFTUND is a string to be sent to the printer after
               1730 ::::each underlined character.
               1740
09C4- 08 5F 00 1750 AFTUND   .BY $08 $5F $00 $00
09C7- 00
               1760
               1770 ::::EMPHCH is a string to be sent to the printer
               1780 ::::when the EC command is given.
               1790
09C8- 00 00 00 1800 EMPHCH   .BY $00 $00 $00 $00
09CB- 00
               1810
               1820 ::::NOTEMPH is a string to be sent to the printer
               1830 ::::when the NE command is given.
               1840
09CC- 00 00 00 1850 NOTEMPH  .BY $00 $00 $00 $00
09CF- 00
               1860
               1870 ::::DWCH is a string to be sent to the printer
               1880 ::::before each doublewidth character.
               1890
09D0- 00 00 00 1900 DWCH     .BY $00 $00 $00 $00
09D3- 00
               1910
               1920 ::::SWCH is a string to be sent to the printer
               1930 ::::after each doublewidth character.
               1940
09D4- 20 00 00 1950 SWCH     .BY $20 $00 $00 $00
09D7- 00
               1960
               1970 ::::Z1STR is a string to be sent to the printer when
               1980 ::::the 'Z1' command occurs in the text.
               1990
09D8- 00 00 00 2000 Z1STR    .BY $00 $00 $00 $00
09DB- 00
               2010
               2020 ::::Z2STR is a string to be sent to the printer when
               2030 ::::the 'Z2' command occurs in the text.
               2040
09DC- 00 00 00 2050 Z2STR    .BY $00 $00 $00 $00
09DF- 00
               2060
               2070 ::::Z3STR is a string to be sent to the printer when
               2080 ::::the 'Z3' command occurs in the text.
               2090
09E0- 00 00 00 2100 Z3STR    .BY $00 $00 $00 $00
09E3- 00
               2110
               2120 ::::Z4STR is a string to be sent to the printer when
               2130 ::::the 'Z4' command occurs in the text.
               2140
09E4- 00 00 00 2150 Z4STR    .BY $00 $00 $00 $00
09E7- 00
               2160
               2170 ::::Z5STR is a string which will be sent to the
               2180 ::::printer at the beginning of the print-line
               2190 ::::in which the 'Z5' command occurs.
               2200
09E8- 00 00 00 2210 Z5STR    .BY $00 $00 $00 $00
09EB- 00
               2220
               2230 ::::Z6STR is a string which will be sent to the
               2240 ::::printer at the beginning of the print-line
               2250 ::::in which the 'Z6' command occurs.
               2260
09EC- 00 00 00 2270 Z6STR    .BY $00 $00 $00 $00
09EF- 00
               2280
               2290 ::::Z7STR is a string which will be sent to the
               2300 ::::printer at the beginning of the print-line
               2310 ::::in which the 'Z7' command occurs.
               2320
09F0- 00 00 00 2330 Z7STR    .BY $00 $00 $00 $00
09F3- 00
               2340
               2350
               2360
               2370
               2380
               2390 ***************** INITSTR ****************
               2400
```

```
                2410    INITSTR is a string which output
                2420    immediately after the call to $0840 which
                2430    initializes the interface.
                2440
                2450  The purpose of this string is to send any special
                2460  characters which might be needed to set up
                2470  the interface or printer.
                2480
                2490
                2500
09F4- 00 00 00  2510 INITSTR  .BY $00 $00 $00 $00 $00 $00
09F7- 00 00 00
09FA- 00 00 00  2520          .BY $00 $00 $00 $00 $00 $00
09FD- 00 00 00
                2530          .EN
```

LABEL FILE:

```
SETPTCH=0900          SETLS=0920          SP1/60=0940
SP2/60=0948           SP3/60=0950         SP4/60=0958
SP5/60=0960           OUTLS=0968          OUTPTCH=0970
BEFBOLD=0978          AFTBOLD=0984        HLFLNFD=0990
HLFLNFDU=099C         SHEXTRA=09A8        RED=09B4
BLACK=09BA            BEFUND=09C0         AFTUND=09C4
EMPHCH=09C8           NOTEMPH=09CC        DWCH=09D0
SWCH=09D4             Z1STR=09D8          Z2STR=09DC
Z3STR=09E0            Z4STR=09E4          Z5STR=09E8
Z6STR=09EC            Z7STR=09F0          INITSTR=09F4
<end of label file>
```

Listing 5

See the rules at the beginning of the chapter! An alternative version of PARAMETERS is presented here.

```
                0010 ***********************************************
                0020
                0030      PRINTER PARAMETERS
                0040
                0050 COPYRIGHT 1981 COMPUTER SOLUTIONS
                0060
                0070
                0080 THIS VERSION FOR THE NEC SPINWRITER 5510 & 5520
                0090
                0100 ***********************************************
                0110
                0120          .BA $0900
0900- 18        0130 SETPTCH  CLC
0901- 69 40     0140          ADC #$40
0903- 8D 86 09  0150          STA AFTBOLD+2
0906- CE 86 09  0160          DEC AFTBOLD+2
0909- CE 86 09  0170          DEC AFTBOLD+2
090C- 8D 8A 09  0180          STA AFTBOLD+6
090F- 8D 72 09  0190          STA OUTPTCH+2
0912- 60        0200          RTS
                0210
                0220          .BA $0920
0920- 48        0230 SETLS    PHA
0921- 4A        0240          LSR A
0922- 18        0250          CLC
0923- 69 4F     0260          ADC #$4F
0925- 8D AA 09  0270          STA SHEXTRA+2
0928- 68        0280          PLA
0929- 18        0290          CLC
092A- 69 4F     0300          ADC #$4F
092C- 8D 6A 09  0310          STA OUTLS+2
092F- 8D 96 09  0320          STA HLFLNFD+6
0932- 8D A3 09  0330          STA HLFLNFDU+7
0935- 8D AE 09  0340          STA SHEXTRA+6
0938- 60        0350          RTS
                0360
                0370
                0380          .BA $0940
0940- 1B 5D 42  0390 SP1/60   .BY $1B $5D $42 $20 $00 $00 $00 $00
0943- 20 00 00
0946- 00 00
0948- 1B 5D 44  0400 SP2/60   .BY $1B $5D $44 $20 $00 $00 $00 $00
094B- 20 00 00
094E- 00 00
0950- 1B 5D 46  0410 SP3/60   .BY $1B $5D $46 $20 $00 $00 $00 $00
0953- 20 00 00
0956- 00 00
0958- 1B 5D 48  0420 SP4/60   .BY $1B $5D $48 $20 $00 $00 $00 $00
095B- 20 00 00
095E- 00 00
0960- 1B 5D 4A  0430 SP5/60   .BY $1B $5D $4A $20 $00 $00 $00 $00
0963- 20 00 00
0966- 00 00
                0440
0968- 1B 5D 57  0450 OUTLS    .BY $1B $5D $57 $00 $00 $00 $00 $00
096B- 00 00 00
096E- 00 00
                0460
0970- 1B 5D 4C  0470 OUTPTCH  .BY $1B $5D $4C $00 $00 $00 $00 $00
0973- 00 00 00
0976- 00 00
                0480
0978- 08 1B 5D  0490 BEFBOLD  .BY $08 $1B $5D $41 $20 $00
097B- 41 20 00
097E- 00 00 00  0500          .BY $00 $00 $00 $00 $00 $00
0981- 00 00 00
0984- 1B 5D 4A  0510 AFTBOLD  .BY $1B $5D $4A $20 $1B $5D
0987- 20 1B 5D
098A- 4C 00 00  0520          .BY $4C $00 $00 $00 $00 $00
098D- 00 00 00
0990- 1B 5D 52  0530 HLFLNFD  .BY $1B $5D $52 $0A $1B $5D
0993- 0A 1B 5D
```

```
                  .BY $57 $00 $00 $00 $00 $00
0999- 00 00 00
099C- 1B 5D 52 0550 HLFLNFDU .BY $1B $5D $52 $1B $39 $1B
099F- 1B 39 1B
09A2- 5D 57 00 0560          .BY $5D $57 $00 $00 $00 $00
09A5- 00 00 00
09A8- 1B 5D 53 0570 SHEXTRA  .BY $1B $5D $53 $0A $1B $5D
09AB- 0A 1B 5D
09AE- 57 00 00 0580          .BY $57 $00 $00 $00 $00 $00
09B1- 00 00 00
09B4- 1B 33 00 0590 RED      .BY $1B $33 $00 $00 $00 $00
09B7- 00 00 00
09BA- 1B 34 00 0600 BLACK    .BY $1B $34 $00 $00 $00 $00
09BD- 00 00 00
09C0- 00 00 00 0610 BEFUND   .BY $00 $00 $00 $00
09C3- 00
09C4- 08 5F 00 0620 AFTUND   .BY $08 $5F $00 $00
09C7- 00
09C8- 00 00 00 0630 EMPHCH   .BY $00 $00 $00 $00
09CB- 00
09CC- 00 00 00 0640 NOTEMPH  .BY $00 $00 $00 $00
09CF- 00
09D0- 00 00 00 0650 DWCH     .BY $00 $00 $00 $00
09D3- 00
09D4- 20 00 00 0660 SWCH     .BY $20 $00 $00 $00
09D7- 00
09D8- 00 00 00 0670 Z1STR    .BY $00 $00 $00 $00
09DB- 00
09DC- 00 00 00 0680 Z2STR    .BY $00 $00 $00 $00
09DF- 00
09E0- 00 00 00 0690 Z3STR    .BY $00 $00 $00 $00
09E3- 00
09E4- 00 00 00 0700 Z4STR    .BY $00 $00 $00 $00
09E7- 00
09E8- 00 00 00 0710 Z5STR    .BY $00 $00 $00 $00
09EB- 00
09EC- 00 00 00 0720 Z6STR    .BY $00 $00 $00 $00
09EF- 00
09F0- 00 00 00 0730 Z7STR    .BY $00 $00 $00 $00
09F3- 00
09F4- 00 00 00 0740 INITSTR  .BY $00 $00 $00 $00 $00 $00
09F7- 00 00 00
09FA- 00 00 00 0750          .BY $00 $00 $00 $00 $00 $00
09FD- 00 00 00
               0760          .EN
```

ABEL FILE:

```
ETPTCH=0900          SETLS=0920          SP1/60=0940
P2/60=0948           SP3/60=0950         SP4/60=0958
P5/60=0960           OUTLS=0968          OUTPTCH=0970
EFBOLD=0978          AFTBOLD=0984        HLFLNFD=0990
LFLNFDU=099C         SHEXTRA=09A8        RED=09B4
```



```
BLACK=09BA           BEFUND=09C0         AFTUND=09C4
EMPHCH=09C8          NOTEMPH=09CC        DWCH=09D0
SWCH=09D4            Z1STR=09D8          Z2STR=09DC
Z3STR=09E0           Z4STR=09E4          Z5STR=09E8
Z6STR=09EC           Z7STR=09F0          INITSTR=09F4
<end of label file>
```

Listing 6

Not quite as good as those above.

```
               0010 ********************************************
               0020
               0030      PRINTER PARAMETERS
               0040
               0050 COPYRIGHT 1981 COMPUTER SOLUTIONS
               0060
               0070
               0080 THIS VERSION FOR RADIO SHACK'S DAISY WHEEL PRINTER II
               0090
               0100 ********************************************
               0110
               0120
               0130          .BA $0900
0900- C9 0A    0140 SETPTCH  CMP #$0A
0902- F0 06    0150          BEQ SETPTCH1
0904- A9 0E    0160          LDA #$0E
0906- 8D 71 09 0170          STA OUTPTCH+1
0909- 60       0180          RTS
090A- A9 0F    0190 SETPTCH1 LDA #$0F
090C- 8D 71 09 0200          STA OUTPTCH+1
090F- 60       0210          RTS
               0220
               0230
               0240          .BA $0920
0920- 60       0250 SETLS    RTS     FUNCTION NOT AVAILABLE!!!
               0260
               0270
               0280
               0290          .BA $0940
0940- 1B 01 00 0300 SP1/60   .BY $1B $01 $00 $00 $00 $00 $00 $00
0943- 00 00 00
0946- 00 00
0948- 1B 02 00 0310 SP2/60   .BY $1B $02 $00 $00 $00 $00 $00 $00
094B- 00 00 00
094E- 00 00
0950- 1B 03 00 0320 SP3/60   .BY $1B $03 $00 $00 $00 $00 $00 $00
0953- 00 00 00
0956- 00 00
0958- 1B 04 00 0330 SP4/60   .BY $1B $04 $00 $00 $00 $00 $00 $00
095B- 00 00 00
095E- 00 00
0960- 1B 05 00 0340 SP5/60   .BY $1B $05 $00 $00 $00 $00 $00 $00
```

```
0963- 00 00 00
0966- 00 00
                0350
0968- 00 00 00 0360 OUTLS     .BY $00 $00 $00 $00 $00 $00 $00 $00
096B- 00 00 00
096E- 00 00
                0370
0970- 1B 0E 00 0380 OUTPTCH   .BY $1B $0E $00 $00 $00 $00 $00 $00
0973- 00 00 00
0976- 00 00
                0390
0978- 08 00 00 0400 BEFBOLD   .BY $08 $00 $00 $00 $00 $00
097B- 00 00 00
097E- 00 00 00 0410           .BY $00 $00 $00 $00 $00 $00
0981- 00 00 00
0984- 00 00 00 0420 AFTBOLD   .BY $00 $00 $00 $00 $00 $00
0987- 00 00 00
098A- 00 00 00 0430           .BY $00 $00 $00 $00 $00 $00
098D- 00 00 00
0990- 1B 1C 00 0440 HLFLNFD   .BY $1B $1C $00 $00 $00 $00
0993- 00 00 00
0996- 00 00 00 0450           .BY $00 $00 $00 $00 $00 $00
0999- 00 00 00
099C- 1B 1E 00 0460 HLFLNFDU  .BY $1B $1E $00 $00 $00 $00
099F- 00 00 00
09A2- 00 00 00 0470           .BY $00 $00 $00 $00 $00 $00
09A5- 00 00 00
09A8- 1B 1C 00 0480 SHEXTRA   .BY $1B $1C $00 $00 $00 $00
09AB- 00 00 00
09AE- 00 00 00 0490           .BY $00 $00 $00 $00 $00 $00
09B1- 00 00 00
09B4- 00 00 00 0500 RED       .BY $00 $00 $00 $00 $00 $00
09B7- 00 00 00
09BA- 00 00 00 0510 BLACK     .BY $00 $00 $00 $00 $00 $00
09BD- 00 00 00
09C0- 00 00 00 0520 BEFUND    .BY $00 $00 $00 $00
09C3- 00
09C4- 08 5F 00 0530 AFTUND    .BY $08 $5F $00 $00
09C7- 00
09C8- 00 00 00 0540 EMPHCH    .BY $00 $00 $00 $00
09CB- 00
09CC- 00 00 00 0550 NOTEMPH   .BY $00 $00 $00 $00
09CF- 00
09D0- 00 00 00 0560 DWCH      .BY $00 $00 $00 $00
09D3- 00
09D4- 20 00 00 0570 SWCH      .BY $20 $00 $00 $00
09D7- 00
09D8- 00 00 00 0580 Z1STR     .BY $00 $00 $00 $00
09DB- 00
09DC- 00 00 00 0590 Z2STR     .BY $00 $00 $00 $00
09DF- 00
09E0- 00 00 00 0600 Z3STR     .BY $00 $00 $00 $00
09E3- 00
09E4- 00 00 00 0610 Z4STR     .BY $00 $00 $00 $00
09E7- 00
09E8- 00 00 00 0620 Z5STR     .BY $00 $00 $00 $00
09EB- 00
09EC- 00 00 00 0630 Z6STR     .BY $00 $00 $00 $00
09EF- 00
09F0- 00 00 00 0640 Z7STR     .BY $00 $00 $00 $00
09F3- 00
09F4- 00 00 00 0650 INITSTR   .BY $00 $00 $00 $00 $00 $00
09F7- 00 00 00
09FA- 00 00 00 0660           .BY $00 $00 $00 $00 $00 $00
09FD- 00 00 00
                0670          .EN
```

LABEL FILE:

```
SETPTCH=0900        SETPTCH1=090A       SETLS=0920
SP1/60=0940         SP2/60=0948         SP3/60=0950
SP4/60=0958         SP5/60=0960         OUTLS=0968
OUTPTCH=0970        BEFBOLD=0978        AFTBOLD=0984
HLFLNFD=0990        HLFLNFDU=099C       SHEXTRA=09A8
RED=09B4            BLACK=09BA          BEFUND=09C0
AFTUND=09C4         EMPHCH=09C8         NOTEMPH=09CC
DWCH=09D0           SWCH=09D4           Z1STR=09D8
Z2STR=09DC          Z3STR=09E0          Z4STR=09E4
Z5STR=09E8          Z6STR=09EC          Z7STR=09F0
INITSTR=09F4
<end of label file>
```

Centronics 737/739

This one is not implemented on the ZARDAX disk but is a good illustration of how to custom fit the file to a dot-matrix printer with many functions. In particular note the use of Z5, Z6 and Z7 to provide character size changes. The Centronics requires that such strings be **at the beginning of the line.**

```
                0010 ********************************************
                0020
                0030      PRINTER PARAMETERS
                0040
                0050 COPYRIGHT 1981 COMPUTER SOLUTIONS
                0060
                0070
                0080 THIS VERSION FOR CENTRONICS 737/739
                0090
                0100 ********************************************
                0110
                0120
                0130          .BA $0900
0900- 60        0140 SETPTCH  RTS     NOT AVAILABLE
                0150
```

```
                        0160
                        0170            .BA $0920
 920- 60                0180 SETLS      RTS     FUNCTION NOT AVAILABLE!!!
                        0190
                        0200
                        0210            .BA $0940
 940- 00 00 00 0220 SP1/60    .BY $00 $00 $00 $00 $00 $00 $00 $00
 943- 00 00 00
 946- 00 00
 948- 00 00 00 0230 SP2/60    .BY $00 $00 $00 $00 $00 $00 $00 $00
 94B- 00 00 00
 94E- 00 00
 950- 00 00 00 0240 SP3/60    .BY $00 $00 $00 $00 $00 $00 $00 $00
 953- 00 00 00
 956- 00 00
 958- 00 00 00 0250 SP4/60    .BY $00 $00 $00 $00 $00 $00 $00 $00
 95B- 00 00 00
 95E- 00 00
 960- 00 00 00 0260 SP5/60    .BY $00 $00 $00 $00 $00 $00 $00 $00
 963- 00 00 00
 966- 00 00
                        0270
 968- 00 00 00 0280 OUTLS     .BY $00 $00 $00 $00 $00 $00 $00 $00
 96B- 00 00 00
 96E- 00 00
                        0290
 970- 00 00 00 0300 OUTPTCH   .BY $00 $00 $00 $00 $00 $00 $00 $00
 973- 00 00 00
 976- 00 00
 978- 00 00 00 0310 BEFBOLD   .BY $00 $00 $00 $00 $00 $00
 97B- 00 00 00
 97E- 00 00 00 0320           .BY $00 $00 $00 $00 $00 $00
 981- 00 00 00
 984- 00 00 00 0330 AFTBOLD   .BY $00 $00 $00 $00 $00 $00
 987- 00 00 00
 98A- 00 00 00 0340           .BY $00 $00 $00 $00 $00 $00
 98D- 00 00 00
 990- 1B 1C 00 0350 HLFLNFD   .BY $1B $1C $00 $00 $00 $00
 993- 00 00 00
 996- 00 00 00 0360           .BY $00 $00 $00 $00 $00 $00
 999- 00 00 00
 99C- 1B 1E 00 0370 HLFLNFDU  .BY $1B $1E $00 $00 $00 $00
 99F- 00 00 00
 9A2- 00 00 00 0380           .BY $00 $00 $00 $00 $00 $00
 9A5- 00 00 00
 9A8- 1B 1C 00 0390 SHEXTRA   .BY $1B $1C $00 $00 $00 $00
 9AB- 00 00 00
 9AE- 00 00 00 0400           .BY $00 $00 $00 $00 $00 $00
 9B1- 00 00 00
 9B4- 00 00 00 0410 RED       .BY $00 $00 $00 $00 $00 $00
 9B7- 00 00 00
 9BA- 00 00 00 0420 BLACK     .BY $00 $00 $00 $00 $00 $00
 9BD- 00 00 00
 9C0- 0F 00 00 0430 BEFUND    .BY $0F $00 $00 $00
 9C3- 00
 9C4- 0E 00 00 0440 AFTUND    .BY $0E $00 $00 $00
 9C7- 00
 9C8- 00 00 00 0450 EMPHCH    .BY $00 $00 $00 $00
 9CB- 00
 9CC- 00 00 00 0460 NOTEMPH   .BY $00 $00 $00 $00
 9CF- 00
 9D0- 1B 0E 00 0470 DWCH      .BY $1B $0E $00 $00
 9D3- 00
 9D4- 1B 0F 00 0480 SWCH      .BY $1B $0F $00 $00
 9D7- 00
 9D8- 00 00 00 0490 Z1STR     .BY $00 $00 $00 $00
 9DB- 00
 9DC- 00 00 00 0500 Z2STR     .BY $00 $00 $00 $00
 9DF- 00
 9E0- 00 00 00 0510 Z3STR     .BY $00 $00 $00 $00
 9E3- 00
 9E4- 00 00 00 0520 Z4STR     .BY $00 $00 $00 $00
 9E7- 00
 9E8- 1B 11 00 0530 Z5STR     .BY $1B $11 $00 $00
 9EB- 00
 9EC- 1B 13 00 0540 Z6STR     .BY $1B $13 $00 $00
 9EF- 00
 9F0- 1B 14 00 0550 Z7STR     .BY $1B $14 $00 $00
 9F3- 00
 9F4- 09 4B 09 0560 INITSTR   .BY $09 $4B $09 $32 $35 $35
 9F7- 32 35 35
 9FA- 4E 1B 11 0570           .BY $4E $1B $11 $00 $00 $00
 9FD- 00 00 00
                        0580            .EN
```

LABEL FILE:

SETPTCH=0900	SETLS=0920	SP1/60=0940
SP2/60=0948	SP3/60=0950	SP4/60=0958
SP5/60=0960	OUTLS=0968	OUTPTCH=0970
BEFBOLD=0978	AFTBOLD=0984	HLFLNFD=0990
HLFLNFDU=099C	SHEXTRA=09A8	RED=09B4
BLACK=09BA	BEFUND=09C0	AFTUND=09C4
EMPHCH=09C8	NOTEMPH=09CC	DWCH=09D0
SWCH=09D4	Z1STR=09D8	Z2STR=09DC
Z3STR=09E0	Z4STR=09E4	Z5STR=09E8
Z6STR=09EC	Z7STR=09F0	INITSTR=09F4

<end of label file>

This parameters file could be implemented by modifying SETUP. Insert t
following line in SETUP.

```
11000 PRINT D$ "BLOAD C737, A" BA+256
```

Once this implementation is done and you have RUN SETUP, the followi
features will be found: Onscreen underlining will now work correctl
However, justification will not work when in proportional mode. The PI
and BF commands are not supported. The DS SS SH DW and SW commands a
supported.

Z5 Z6 and Z7 are printer commands which change the print style. Only one of these commands can be used on any line and the command automatically takes effect at the beginning of the line. Z5 (proportional) Z6 (monospaced) and Z7 (condensed). Judicious changes of margin may be required when changing print style. Experiment.

Epson MX-80

SETUP does support the MX-80 (either with the Graftrax option or without). Use with other Epson printers or with future models of the MX-80 may require rewriting the parameters file. The two parameter files are stored on the disk with the names MX80+G and MX-80-G. They should be examined as a model for constructing similar files for other Epson models and for other printers.

The following commands are NOT supported by these printers:
PI LS BF NB SH SU SD RD BK

The commands EC NE DW SW are supported.

Underlining is not supported, except in a limited way with the Graftrax option.

The following additional commands are also supported:

Z1 condensed print on
Z2 condensed print off
Z3 italics on (Graftrax option only)
Z4 italics off

Chapter 26
The USER File

26: The USER file

If you had a printer which really required a long driver which could not fit in the 128 bytes allocated from $0840 you would have to use the USER file. This file is currently empty. When ZARDAX is started up, the file is loaded at $2004 (in an 80-column video system) or at $4004 (in a 40-column video system).

You must ensure that the file is written to execute in the desired location. A custom driver at $0840 could then call the routines here.

It doesn't matter where it is BSAVED from, just so it will execute at the desired address.

It is essential that when it is BSAVEd, the L parameter is no larger than necessary. In any event, the L parameter may be no larger than $3F0.

Chapter 27
The Samples

The ZARDAX disk comes with several sample files on it for you to look at and get some ideas. Understanding these documents will probably take you some time, and you may need to consult earlier parts of this manual.

The document called SAMPLE1 is in some ways the trickiest one of all. You are advised to retrieve it and look at what's on the screen and compare that with what's printed here. This is how the document comes out when printed on a good letter-quality printer. Your printer might not be able to print it properly. Note that you don't have to be able to write documents like this to use ZARDAX effectively, but it is an attractive demonstration of some features you might otherwise overlook.

Here is the document when printed:

This is a sample of highly formatted text, including indentation, printer tabs, and other goodies. It may not work this way on all printers.

The Menus

The Main Menu

a. Handles disk functions
and multiprinting of text
files on the disk.

b. You get here on boot-up.

The Inner Menu

a. Does saving and printing
of the file currently in memory.

b. You get here after a create.

+
This
is the way
to get the old
Christmas Tree effect
on
the
text

Now some over-printing, for those
printers permitting backspacing

↑ ↑
≠ +
∀ ∀
÷ £

Samples 2,3,4,5,6,7

These samples show the various documents illustrated in chapter 7.

The remaining samples

The other sample documents illustrate how the system might be used to produce form letters. The assumption is that you own a store selling computer equipment and you get letters from people asking your advice. The enquiries come in one of two kinds. Either the enquiry is from a business or it is from someone interested in a personal computer. Your reply always includes the INTRO and the CLOSE. It also include one of the two choices PERSONAL or BUSINESS. Also, at the time of answering you include the enquirer's name on the NAMES file. This enables you to send a later form letter to all enquirers, and to have a list of all who have received a first letter.

Suppose you have received an enquiry from a business. Firstly, retrieve the NAMES file. Type the client's name and address information at the top of the file (immediately after the labels). Thus if the most recent client is the one nearest the top of the NAMES file.

Then Save the NAMES file and go back to the main menu.

Create a document call TEMP. Do not type anything. Press CTRL-I and insert the INTRO file. Press CTRL-I and insert the BUSINESS file. Press CTRL-I and insert the CLOSE file. Finally ESC to the inner menu. Press P for print, and when the system asks how many copies, say 1. When it asks from what page to start printing, say 1. When it asks whether to get information from keyboard or diskfile, say "diskfile". When it asks which diskfile, select the NAMES file. Presto!

Using GOODSPELL with ZARDAX

Apple Computer Inc. publish a spelling program called GOODSPELL. To use it with ZARDAX you must make one change to the GOODSPELL disk. Boot DOS 3.3, then insert the zardax disk and LOAD SPELCHEKER, then insert the goodspell disk and SAVE HELLO.

Your copy of GOODSPELL has now been modified so that when it is loaded it first looks for a zardax document to check. If none is found, it goes ahead with its ordinary use and assumes you wish to check a document produced by APPLEWRITER.

Here is the procedure to use:

1. go to the main menu of ZARDAX
2. Retrieve the document you wish to check
3. press ESC
4. press R
5. type SPELCHEK then press RETURN
6. insert your goodspell disk
7. press O (the letter Oh, not zero)
8. press 3
9. press M then press E
10. press Y
11. press CTRL-RESET
12. wait until asked a question
13. answer Y to the question
14. switch your printer on
15. answer SPELCHEK to the next question
16. proceed as in goodspell manual
17. when finished press CTRL-RESET
18. insert zardax disk, press CTRL-RESET again
19. edit your original document

Chapter 28
The LCIO routines

On the ZARDAX disk, there are a number of files with the word LCIO as part of their name. These routines allow an Applesoft programmer to use the HIRES routines which ZARDAX uses, together with the same keyboard modification, to write BASIC programs in upper and lower case. The routines are not perfect, but the experienced user might find them of interest. Note that they may not be distributed in any form, but you may copy them onto other disks for your own use. All the routines are Copyrighted by Computer Solutions.

This chapter contains some sparse documentation on the routines.

The LCIO routines allows you to use full upper and lower case in your Apple in conjunction with BASIC programs. LCIO comes in four versions which occupy different areas of memory. The starting address of the version is contained in its name.

The four versions are:
LCIO6016
LCIO14208
LCIO16384
LCIO24576

The length of each file is 2176 bytes. Thus to make a copy of LCIO6016 you should BLOAD LCIO6016 then BSAVE LCIO6016,A6016,L2176

Addresses of callable routines:

START: STRT	for example CALL 6016
HOME: STRT+3	for example CALL 6019
CLEAR.TO.END.OF.LINE: STRT+6	for example CALL 6022
CLEAR.TO.END.OF.SCREEN: STRT+9	for example CALL 6025

APPLESOFT COMMANDS: All VTAB and HTAB and windowing commands work as normal.
HOME and TEXT should be avoided.

LCIO6016	If you use HGR, then CALL 6016 immediately.
LCIO14208	Avoid HGR.
LCIO16384	Avoid HGR2. If you use HGR, then CALL16384.
LCIO24576	HGR may be used, but to recover do not use TEXT, use CALL 24576.

If you use a peripheral do not use PR#0 to recover the screen, use CALL STRT, for example CALL 6016.

SUGGESTED MEMORY USE:

Version	Maximum length of your BASIC program	Set LOMEM:
LCIO6016	3967 bytes	16384
LCIO16384	6143 bytes	18570
LCIO14208	12157 bytes	24576
LCIO24576	14335 bytes	26760

KEYBOARD MODIFICATION

The program LCIO requires a modification to the keyboard of your Apple. Any of the mods may be used and you must "tell" LCIO which mod to expect. The mods are explained in Chapter 24.

You "tell" LCIO which mod to expect by running the program LCIO.SETUP.

USING OTHER FONTS FOR THE DISPLAY:

If you have a copy of the DOS TOOLKIT from Apple Computer, you can use the program ANIMATRIX to create other fonts (for example, Greek fonts, Cyrillic fonts etc.)

To replace the font supplied with LCIO you should BLOAD the new font at address STRT+1408

for example:

```
BLOAD LCIO6016
BLOAD <font> , A7424
BSAVE LCIO6016, A6016, L2176
```

A SAMPLE PROGRAM USING LCIO

```
]BLOAD LCIO6016
]CALL 6016
]10 PRINT CHR$(4)"BLOAD LCIO6016": HGR : CALL 6016
]15 LOMEM:16384
]20 HCOLOR=3 : IO = 6016 : HO = 6019 : REM CALL HO = HOME
]30 CALL HO : PRINT "Demonstration program" : VTAB 2
]35 HTAB 10
]40 GOSUB 200
]50 VTAB 8 : POKE 50,127 : GOSUB 200
]60 VTAB 12 : POKE 50,63 : GOSUB 200
]70 VTAB 16 : NORMAL : GOSUB 200
]80 CALL HO : LIST : PRINT : PRINT:PRINT:PRINT:PRINT
]85 PRINT:PRINT : VTAB 22
]90 HPLOT 0,0 TO 100,100 TO 140,0 TO 279,191  : END
]200 PRINT "Press any key to go on : ";: GET A$ : RETURN
```

Computer Solutions

everything to line up, you might (with each Z1 command) also give commands for LM RM MA with new values. They will all have to be changed back when you give the Z3 command! Experiment until you get familiar with the effects!

USING GOODSPELL WITH ZARDAX

Apple Computer Inc. publish a very impressive program called GOODSPELL. To use it with ZARDAX you must make one change to the GOODSPELL disk. Boot DOS 3.3, then insert the zardax disk and LOAD SPELCHEKER, then insert the goodspell disk and SAVE HELLO.
ZARDAX uses ordinary format for storage of documents on disk, so a conversion is necessary for GOODSPELL to be able to check ZARDAX documents. Your copy of GOODSPELL has now been modified so that when it is loaded it first looks for a ZARDAX document to check. If none is found, it goes ahead with its ordinary use and assumes you wish to check a document produced by APPLEWRITER.

We now give the procedure you must adopt to use your modified copy of GOODSPELL when checking the spelling in a ZARDAX document.

1. go to the Main Menu of Zardax
2. Retrieve the document you wish to check
3. press ESC
4. press R
5. type SPELCHEK then press RETURN
6. insert your GOODSPELL disk
7. press O (the letter Oh , not zero)
8. press 3
9. press M
10. press Y
11. press CTRL-RESET
12. wait until asked a question
13. answer Y to the first question
14. switch on your printer
15. answer SPELCHEK to the next question
16. proceed as in manual to answer Y or N for each word
17. when asked for next file name, press CTRL-RESET
18. insert ZARDAX disk
19. press CTRL-RESET
20. use the printed spelling errors to alter your original document

SPECIFICATIONS

This software requires the following hardware configuration
1. Apple II Plus 48K
2. at least one Apple Disk II drive (interface in slot 6)
3. keyboard modification (supplied)
4. a printer (preferably a letter-quality "Diablo-compatible" printer like the NEC Spinwriter 5515 or the Qume Sprint 5 or the Vista V300 or the Starwriter). With other printers the user will have to code specific instructions for the use of special features like underlining, double width characters etc.
5. Apple standard interface -
   Apple Parallel
   Apple Serial (with P8A Prom)
   Apple Communication
   CCS Serial Asynchronous
   Use with other interfaces is possible but the interface firmware may occasionally interfere with the correct operation of the software. Should this be so, the user can insert a driver to bypass the interface firmware.
6. Optional extra equipment:
   a. more disk drives
   b. Apple language card or 16K RAM card
   c. one of these 80-column video boards (slot 3)
   Vision-80 (ZEV 80*24)
   Apple Smarterm
   Videx 80
   DoubleVision

ERRATA

The following errors and omissions occur in the ZARDAX manual:

1. On page 25-3, DOCSLT should be $60
2. On page 25-4, TRASLT should be $60
3. Chapter 27 should mention that some of the samples cannot be printed using the PRINT command. You will have to use the DRAFT command. The DRAFT command allows you to print curly-brackets literally without the interpretation (see chapter 7) given by the PRINT command.
4. Error on page 25-11. The string EMPHCH is sent to the printer at the time when the "EC" command is issued, NOT before each emphasized character. Likewise the NOTEMPH string is sent to the printer when the "NE" command is issued, NOT after each emphasized character.
5. Videoprint in eighty column mode shows only 79 columns.
6. If ZARDAX is to be started from a disk slot other than slot 6, it will be necessary to modify SETUP by including line 19000 as follows:
   19000 POKE BA+58, <value> : POKE BA+61, <value>
   where <value> is 16 times slot number.

7. Third paragraph on page 10-3 is in error: the command to turn numbering back on is PN0 not PN0.32 as stated.
8. The Videx 80-column board cannot normally show inverse characters and thus onscreen underlining remains invisible to tne operator.
9. Chapter 27 omits to mention several samples which are outlined below.

Sample8 is a document which you can use to practise your editing with. It contains some advice and assistance with the practice.

Sample9 is a sample of a Glossary. It contains five items. Retrieve it to see how it is constructed, but do not print it. It is actually exactly the same as the document B1 (GLOSSARY) on the disk. You will be very likely to replace B1 with another document called GLOSSARY. See page 6-4. If you do the replacement mentioned there, then your new B1 file will be the one automatically loaded when ZARDAX is started up.

Sample10 is a glossary that could be very useful if you were using a Centronics 737 printer. This glossary consists of 9 items. P initiates proportional spaced printing (justification will then not work). M initiates monospaced printing. [Note that these two must occur in a line with LM and MA set to 0]. D initiates double-width printing. S initiates single-width printing. U initiates underlining. N initiates not-underlining. A (above) before superscripts or after subscripts. B (below) before subscripts or after superscripts. T is useful at the beginning of a document using proportional printing.

A MUCH BETTER WAY OF USING THE FACILITIES OF THE 737 is not to use this glossary but to modify SETUP as described below.

"OTHER" PRINTERS

When you use a printer other than the letter-quality printers mentioned in the SETUP program, then ZARDAX will not make many assumptions about what is possible in the way of underlining, doublewidth characters, and other special printer features. It is possible for you to implement many features by studying chapter 25. To assist in this matter, we here provide two examples of interfacing the system to such printers. The first example applies to the Centronics 737 (or 739) and the second example to the (unoptioned) MX-80.

Centronics 737 and 739

The relevant disk file is called C737. A listing is provided in the manual on page 25-18. To implement this option, simply insert the following line into SETUP:

```
11000 PRINT D$ "BLOAD C737, A" BA+256
```

When implemented, the following features will be found:

Onscreen underlining will work. Note that justification is impossible when in proportional print mode. The PI and LS and BF commands must be avoided. The DS SS SH DW and SW commands will work.

Z5 Z6 and Z6 are printer commands which change the print style with the Centronics printers. Only one of these commands can be used on any line and the command automatically takes effect at the beginning of the line. Z5 (proportional) Z6 (monospaced) and Z6 (condensed). Judicious changes of margin may be required when changing print style. Experiment.

Epson MX-80 Type II (unoptioned)

The relevant disk file is called MX-80. To implement this option, simply insert the following line into SETUP:

```
11000 PRINT D$ "BLOAD MX-80,A" BA+256
```

The greatest lack of the MX-80 is its inability to underline when in text-mode. Thus underlining with ZARDAX must be avoided. The PI and LS commands are not supported but the DS and SS commands are supported.

The modifications mentioned above specifically allow the use of the following commands:

DW doublewidth characters (what Epson calls "enlarged print")
SW singlewidth characters
EC emphasized characters (see note 1)
NE not emphasized characters (see note 1)
Z1 condensed print
Z2 elite print (MX-100 only)
Z3 cancels condensed and elite print

Note 1 The EC command takes effect at the beginning of the line in which the command is found. The NE command takes effect at the beginning of the line in which the command is found.

Note 2 The Z1 Z2 and Z3 commands take effect at the beginning of the line in which the command is found.

Note 3 The condensed print command may cause some surprises to the user. It is important to realise that normal characters occupy 1/8" whereas condensed characters are narrower. This means that if you do not alter RM then your text will occupy only 2/3 the width it previously did. Thus the CE command will appear to misbehave and the settings of LM IN MA will also seem to have been changed. If you want